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Total Number of Pages in This Submission

Application Number	10/729,162
Filing Date	December 5, 2003
First Named Inventor	Walker, Eric
Art Unit	2178
Examiner Name	Faber, David

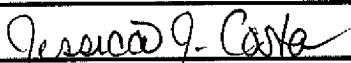
Attorney Docket Number

03-026

ENCLOSURES (Check all that apply)

<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/ Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	VistaPrint USA Inc.		
Signature			
Printed name	Jessica J. Costa		
Date	July 14, 2008	Reg. No.	41,065

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In re application of: Eric Walker
Application No.: 10/729,162 Examiner: David Faber
Filed: December 5, 2003 Art Unit: 2178

Confirmation No. 8570
Docket No.: 03-026
Customer No.: 37420

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

This Reply Brief is provided in reply to the Examiner's Answer mailed May 14, 2008.

I. Status of Claims

Pending claims 1-10, 12 and 16-21 have been twice rejected and are the subject of this appeal. No other claims are pending.

II. Grounds of Rejection to be Reviewed on Appeal

- A. Whether Claims 1, 3-4, 6-8, 10, 16-18, and 20-21 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Coloring.com (Coloring.com, “Coloring.com – free online interactive coloring pages and coloring books”, paragraph 1-27, 28-31).
- B. Whether Claims 2, 5, 9, 12, 15, and 19 are unpatentable under 35 U.S.C. 103(a) over Coloring.com in view of Sams Publishing (Sams Publishing, “Sams Teach Yourself Microsoft Publisher 2000 in 10 Minutes”, published 5/6/1999, printed pages 1-11, 12-16).

III. Argument

A. Claims 1, 3-4, 6-8, 10, 16-18, and 20-21 are NOT unpatentable under 35 U.S.C. §102(b) as being anticipated by Coloring.com (Coloring.com, “Coloring.com – free online interactive coloring pages and coloring books”, paragraph 1-27, 28-31).

On pages 12 and 13 of the Examiner’s Answer, the Examiner argues that Appellant’s definition of “grayscale” as “image content intended to be rendered in multiple color tones based on the combination of two component colors” is not recited in the rejected claims and therefore are not read into the claims. However, in response, “[i]t is well settled that a patent Applicant may be his own lexicographer.” *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 316 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). A familiar canon of claim construction is that, although an inventor may act as a lexicographer, a word will be given its accustomed meaning unless it appears that the inventor used it differently. *ZMI Corp. v. Cardiac Resuscitator Corp.*, 844 F.2d 1576, 1580, 6 USPQ2d 1557, 1560 (Fed. Cir. 1988). Claims are interpreted according to ordinary meaning unless a special meaning is clearly provided in the specification. *In re Morris*, 127 F.3d 1048, 44 USPQ2D 1023 (Fed. Cir. 1997). “When an Applicant states the meaning that claim terms are intended to have, the claims should be examined with that meaning, in order to achieve a complete exploration of the Applicant’s invention and its relation to the prior art.” *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). In the present application, the limitation “grayscale” is clearly given a special meaning as provided on page 5 in paragraph [0023] of the Applicant’s Specification, reprinted below (with emphasis added):

[0023] Of particular relevance to the current invention are “grayscale” images. As is well known in the art, grayscale images are images containing multiple shades or levels of gray. Depending on the system used to create the grayscale image, from 16 to 256 gray levels will typically

be available to render the image, ranging from white at one extreme of the range to black at the other. Tools for creating grayscale images and for converting color images to grayscale are widely available from Adobe Systems Incorporated and other vendors. **It will also be understood that the use of the term “grayscale” or “grayscale image” does not necessarily mean that the image is either stored or displayed to the user in gray shades, but rather the terms are used herein more broadly to refer generally to image content intended to be rendered in multiple color tones based on the combination of two component colors.**

Thus, since the special meaning of the terms “grayscale” and “grayscale image” are clearly and explicitly provided in the specification, the claims should be interpreted according to the special meaning.

On page 12 of the Examiner’s Answer, the Examiner argues the adoption of an online definition of the term “grayscale” from Microsoft’s Digital Photography Glossary, being defined as “A photo made up of varying tones of black and white. Grayscale is synonymous with black and white”. While the Applicant does not agree that it is even proper to look to extrinsic sources for the meaning of the term “grayscale” since Applicant did in fact provide an explicit definition of “grayscale” in the Specification, even so, Microsoft’s Digital Photography Glossary is not a proper source for determining the ordinary and customary meaning of the term. As explicitly stated in the first paragraph of Microsoft’s Digital Photography Glossary, photography has its own language (“Struggling with a word or phrase? You’re not alone. **Photography has long had its own language, and digital photography adds many new terms.** This glossary defines commonly used words and phrases in digital photography.”), and therefore the definitions provided in the Microsoft Glossary are not necessarily the ordinary and customary meaning of any of the defined terms. Furthermore, because the Glossary is provided by a commercial source, namely Microsoft, for users of its software, it is questionable as to whether the Glossary “rise[s] to the level of unbiased, contemporaneous reflection of the common understanding of the technical terms in question as to be considered a reliable source of information on the meaning attributed to those terms by those skilled in the art” as required by previous court decisions. *See ACTV, Inc. and Hypertv Networks, Inc. v. The Walt Disney Co.*, 346 F.3d 1082, 68 USPQ2D 1516,

1522-1523 (Fed. Cir. 2003) (“The written description must also be examined, because it is relevant to aid in the claim construction analysis, e.g., to determine if the presumption of ordinary and customary meaning is rebutted. *See Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed.Cir.1998). The presumption will be overcome where the patentee, acting as his or her own lexicographer, has clearly set forth a definition of the term different from its ordinary and customary meaning. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed.Cir. 1994); *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1387-88 (Fed.Cir. 1992).”)… “The purpose of the RFCs is thus to collect commentary and to select language to facilitate a common understanding, or to select a standard, from a variety of competing technologies and vocabularies and from a variety of potentially competing interests. Indeed, the acronym ‘RFC’ suggests that end: ‘Request for Comments.’ This purpose is in sharp contrast to the role of dictionaries and treatises, which aim not to select or give meaning to a word or phrase, but to report the meaning already established and commonly understood by those skilled in the art.”). Notably, the Examiner did not turn to a standard dictionary for the ordinary meaning of “grayscale”, but cited instead a specialized “glossary” directed to the narrow art of digital photography and published by a commercial entity having no authoritative expertise in the field. Also, notably, the claims are not directed to the specific use of digital **photographs**, but more generally to grayscale images. Accordingly, the Applicant contends that the explicit meaning of the term “grayscale” as set forth in the Applicant’s Specification should have been attributed to the term “grayscale” and not the definition provided in the extrinsic source cited by the Examiner.

On page 13 of the Examiner’s Answer, the Examiner argues that “Coloring.com discloses a grayscale images wherein only the two colors are shown, white and black; wherein black and white images are a form of grayscale images. The Examiner then argues that “the grayscale image is used as content for the element shown in pp 8, 17 of the web page.” The Applicant respectfully disagrees. The “rabbit” as displayed shown in pp 8, 17 of the web page is made up of multiple fillable markup elements, each having a black outline. Each fillable

markup element may be selected by the user via a mouse click, and a currently selected color (as indicated in the color palette on the left hand side of the web page) is used to fill the selected markup element. The “**content**”, therefore, is **only the fill**. The “**content**”, therefore, comprises only **one color**, i.e., the selected palette color, and **not an image**. Even in the case where a pattern fill is selected, there is no pattern fill that is a “grayscale” image.

Notably, the Examiner appears to repeatedly include the black outline of each of the markup elements that make up the rabbit as part of the “content” of the image. For example, on page 13 of the Examiner’s Answer, the Examiner states that “Coloring.com discloses a grayscale images wherein only the two colors are shown, black and white; wherein black and white images are a form of grayscale images. Thus, the grayscale image is used as content for the element shown in pp 8, 17 of the web page.” However, the black outline is the fixed outline of the markup element and is not “**content**” of the element. Only the fill is actually “**content**” of the element.

In summary, because the Applicant’s Specification provides an explicit definition of “grayscale” image to mean “**image content intended to be rendered in multiple color tones based on the combination of two component colors**”, the presumption that the ordinary and custom meaning is to be attributed to the term “grayscale” is therefore rebutted and is therefore read into the claims. Since none of the selectable colors, or even fill patterns, comprises an image comprising multiple color tones based on the combination of only two component colors, Coloring.com does not teach or suggest the limitations “applying a grayscale image as **content** of the element” or “applying the at least one color associated with the element as at least one component color of the **content** image”.

Conclusion

For the reasons set forth above, Applicant respectfully submits that each claim is patentable and reversal of all rejections is respectfully requested.

Respectfully submitted,

Date: July 14, 2008

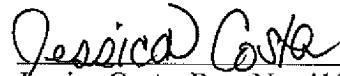

Jessica Costa, Reg. No. 41065
VistaPrint USA Inc.
95 Hayden Avenue
Lexington, MA 02421
Phone: 781-652-6563
Fax: 781-652-7208

TABLE OF CASES

W.L. Gore & Assocs. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303, 316 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

ZMI Corp. v. Cardiac Resuscitator Corp., 844 F.2d 1576, 1580, 6 USPQ2d 1557, 1560 (Fed. Cir. 1988).

In re Morris, 127 F.3d 1048, 44 USPQ2D 1023 (Fed. Cir. 1997).

In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

ACTV, Inc. and Hypertv Networks, Inc. v. The Walt Disney Co., 346 F.3d 1082, 68 USPQ2D 1516, 1522-1523 (Fed. Cir. 2003).

Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed.Cir.1998).

In re Paulsen, 30 F.3d 1475, 1480 (Fed.Cir. 1994).

Intellicall, Inc. v. Phonometrics, Inc., 952 F.2d 1384, 1387-88 (Fed.Cir. 1992).

**W.L. GORE & ASSOCIATES, INC.,
Appellant/Cross-Appellee,**

v.

**GARLOCK, INC.,
Appellee/Cross-Appellant.**

Nos. 83-613, 83-614.

United States Court of Appeals,
Federal Circuit.

Nov. 14, 1983.

Patentee brought infringement action, and accused infringer counterclaimed for declaratory judgment of patent invalidity, noninfringement, fraudulent solicitation, and entitlement to attorney fees. The United States District Court for the Northern District of Ohio entered judgment holding patents invalid, and patentee appealed. The Court of Appeals, Markey, Chief Judge, held that: (1) claims 1 and 17 of patent No. 3,953,566 directed to processes for stretching highly crystalline, unsintered teflon were invalid; (2) accused infringer had not met burden of showing that claims 1, 9, 12, 14, 18, 35, 36, 48, 67, and 77 of patent No. 4,187,390 directed to products obtained by the processes of the companion patent had been anticipated by prior art; (3) accused infringer failed to prove that at time application was filed, specification was not enabling or that claims were indefinite; (4) accused infringer failed to sustain burden of proving, by clear and convincing evidence, sufficient facts from which fraudulent intent could be inferred; (5) District Court did not abuse its discretion in denying accused infringer's request for attorney fees; and (6) better practice was for District Court to decide both validity and infringement issues.

Affirmed in part, reversed in part, and remanded.

Davis, Circuit Judge, concurred in result in part and dissented in part and filed opinion.

1. Patents \Leftrightarrow 16(2)

It is the patent claims that measure or define the invention, for purpose of determining patent validity. 35 U.S.C.A. § 112.

2. Patents \Leftrightarrow 16(1)

Each claimed invention must be considered as a whole in determining validity of patent. 35 U.S.C.A. § 103.

3. Patents \Leftrightarrow 16(1)

Court's restriction of claimed multistep process to one step constitutes error, whether done at behest of patentee relying on restriction to establish infringement by one who employs only that one step in a process otherwise distinct, or at behest of an accused infringer relying on that restriction to establish invalidity by showing that one step in a prior art process otherwise distinct. 35 U.S.C.A. §§ 102, 102(a, b), 103.

4. Patents \Leftrightarrow 62(1)

Finding that limitations of claim of patent directed to processes for stretching highly crystalline, unsintered teflon were met by patentee's operation, before asserted date of his invention, of teflon tape-stretching machine previously invented and patented by patentee's father was supported by record, for purpose of determining whether claim of patent was anticipated by operation of machine. 35 U.S.C.A. § 102(a).

5. Patents \Leftrightarrow 324.55(2)

Fact that district court, bound by precedent at time of trial, applied preponderance of the evidence test in determining claim of patent to have been anticipated by prior art did not render clearly erroneous standard inapplicable on patentee's appeal. 35 U.S.C.A. § 102(a); Fed.Rules Civ.Proc. Rule 52(a), 28 U.S.C.A.

6. Patents \Leftrightarrow 51(1)

Fact that those using patentee's invention for stretching teflon may not have appreciated results was irrelevant to determination of whether claim of patent was anticipated by operation of patented teflon tape-stretching machine in patentee's shop

before asserted date of patentee's invention. 35 U.S.C.A. § 102(a).

7. Patents ↔ 51(2)

Nonsecret use of a claimed process in the usual course of producing articles for commercial purposes is a public use. 35 U.S.C.A. § 102(a).

8. Patents ↔ 75

Manufacturer's use of previously invented machine for producing stretched and unstretched teflon thread seal tape was not a "public use" of processes subsequently claimed in patent directed to processes for stretching highly crystalline, unsintered teflon, notwithstanding that manufacturer allegedly did not keep machine hidden from employees legally bound to keep their knowledge confidential and notwithstanding that another company's employees were shown machine to see if they could help increase its speed, where there was no evidence that viewer of machine could thereby learn anything of which process, among all possible processes, the machine used. 35 U.S.C.A. §§ 102(b), 282.

9. Patents ↔ 80

Manufacturer's and inventor's secret commercialization of whatever process was used in inventor's machine for producing stretched and unstretched teflon thread seal tape could not be held a bar to grant of patent to patentee on that process where, if manufacturer offered and sold anything, it was only tape and not whatever process was used in producing it, and there was no evidence that public could learn claimed process by examining tape. 35 U.S.C.A. § 102(b).

10. Patents ↔ 90(2)

As between a prior inventor who benefits from process by selling its product but suppresses, conceals, or otherwise keeps process from public, and later inventor who promptly files patent application from which public will gain disclosure of process, law favors the latter. 35 U.S.C.A. § 102(b).

11. Patents ↔ 16.8

Failure, in review of prior art with respect to patent directed to processes for

stretching highly crystalline, unsintered teflon, to take into account import of markedly different behavior of such teflon from that of conventional thermoplastic polymers, consideration of patent claims in less than their entireties, and disregard of disclosures in prior art references that diverged from and taught away from invention at hand were error. 35 U.S.C.A. § 103.

12. Patents ↔ 16.25

Disclosure in prior patents that unsintered teflon article could be stretched to as much as four times its length encompassed step of stretching to twice its length set forth in claim 17 of patent No. 3,953,566 directed to processes for stretching highly crystalline, unsintered teflon and established that such step would have been obvious, and thus claim was invalid. 35 U.S.C.A. § 103.

13. Patents ↔ 112.1

Presumption of validity of patent has no separate evidentiary value; it cautions decision maker against rush to conclude invalidity, and submission of additional art that is merely "pertinent" does not dispel that caution. 35 U.S.C.A. § 103.

14. Patents ↔ 312(1½)

Burden of persuasion remains throughout trial on one who would prove invalidity of patent. 35 U.S.C.A. §§ 103, 282.

15. Patents ↔ 36.1(1)

Refusal to consider objective evidence of nonobviousness of processes taught by patent was error. 35 U.S.C.A. § 103.

16. Patents ↔ 312(6)

Accused infringer failed to meet burden of proving that invention which was subject of claims of patent directed to processes for stretching highly crystalline, unsintered teflon and teaching that such teflon could be stretched at a rate of about 100% per second or to more than five times its original length would have been obvious, even though individual parts of separate prior art references could be employed to recreate facsimile of claimed invention. 35 U.S.C.A. § 103.

17. Patents \Leftrightarrow 51(1)

Anticipation requires disclosure in a single prior art reference of each element of claim under consideration. 35 U.S.C.A. § 102.

18. Patents \Leftrightarrow 51(1)

Anticipation of inventions set forth in product claims cannot be predicated on mere conjecture respecting characteristics of products that might result from practice of processes disclosed in references. 35 U.S.C.A. § 102.

19. Patents \Leftrightarrow 66(1.24)

Teachings of prior art references were so unacceptably vague concerning characteristics of products produced by their respective processes as not to support anticipation rejection of claims of patent directed to products obtained by companion processes for stretching highly crystalline, unsintered teflon where neither of prior art references disclosed an invention set forth in any claim of subject patent, no inter partes tests in which processes taught by prior art references were conducted were of record, no products of those processes were placed in evidence, and "effect" of processes disclosed in prior art references was undisclosed in those patents. 35 U.S.C.A. § 102.

20. Patents \Leftrightarrow 66(1.24)

Accused infringer's employment of process covered by patent cited as prior art reference was irrelevant to determination of anticipation of claims of patent directed to products obtained by companion processes for stretching highly crystalline, unsintered teflon, even assuming cited patent was a dominating patent, where there was no basis for finding that cited process in itself necessarily and inherently resulted in products which were subject of claims of patent. 35 U.S.C.A. § 102.

21. Patents \Leftrightarrow 66(1.24)

Accused infringer's employment of process of dominating patent does not render that employment an anticipation of an invention described and claimed in an improvement patent. 35 U.S.C.A. § 102.

22. Patents \Leftrightarrow 62(1)

Accused infringer had not met burden of showing that claims of patent directed to products obtained by companion processes for stretching highly crystalline, unsintered teflon were anticipated by prior art preferences, neither of which disclosed an invention set forth in any claim of patent. 35 U.S.C.A. § 102.

23. Patents \Leftrightarrow 16(2)

Apparent assumption that products which were subject of patent claims, having been found inherent in processes of prior art references, would have been obvious in view of those references was error. 35 U.S.C.A. § 103.

24. Patents \Leftrightarrow 16(1)

Inherency and obviousness are distinct concepts for patent purposes. 35 U.S.C.A. § 103.

25. Patents \Leftrightarrow 36(1)

All evidence bearing on issue of obviousness, as with any other issue raised in conduct of judicial process, must be considered and evaluated before required legal conclusion is reached. 35 U.S.C.A. § 103.

26. Patents \Leftrightarrow 36(1)

Objective evidence of nonobviousness may in a given case be entitled to more weight or less, depending on its nature and its relationship to merits of invention, and it should when present always be considered as an integral part of analysis on obvious/nonobvious issue. 35 U.S.C.A. § 103.

27. Patents \Leftrightarrow 101(5)

A claim to a new product is not legally required to include critical limitations. 35 U.S.C.A. § 103.

28. Patents \Leftrightarrow 16.25

In view of difficulty of working with unsintered teflon and its unpredictable response to various processing techniques, vagueness of prior art references concerning products produced by those processes, and filling of at least two long-felt needs by commercial success of claimed inventions, inventions set forth in claims of patent directed to products obtained by com-

panion processes for stretching highly crystalline, unsintered teflon would not have been obvious to those skilled in art at time those inventions were made. 35 U.S.C.A. § 103.

29. Patents ↔1

Patents are written to enable those skilled in the art, not the public, to practice the invention. 35 U.S.C.A. § 112.

30. Patents ↔99

Statute requiring that patents disclose sufficient information to enable a person of ordinary skill in the art to make and use the invention speaks as of the application filing date, not as of the time of trial. 35 U.S.C.A. § 112.

31. Patents ↔99

Postfiling date development of varying formulae for calculating stretch rate of unsintered teflon was irrelevant to determination of whether patents directed to processes for stretching highly crystalline, unsintered teflon and products obtained by such processes disclosed sufficient information to enable person of ordinary skill in art to make and use invention, as required by statute. 35 U.S.C.A. § 112.

32. Patents ↔99

Statute requiring that patents disclose sufficient information to enable person of ordinary skill in art to make and use invention requires that inventor set forth best mode of practicing invention known to him at time application was filed. 35 U.S.C.A. § 112.

33. Patents ↔101(6)

Use of phrase "stretching * * * at a rate exceeding about ten percent per second" in claims of patent directed to processes for stretching highly crystalline, unsintered teflon was not indefinite, for purpose of assessment of infringement, where infringement was assessable through use of stopwatch. 35 U.S.C.A. § 112.

34. Patents ↔101(4)

Absence from specification of patent directed to processes for stretching highly crystalline, unsintered teflon of a method

for calculating minimum rate of stretch above 35 degrees centigrade did not render specification nonenabling, notwithstanding that minimum rate of stretch might increase with temperature, where calculation of minimum stretch rate above 35 degrees centigrade was not in claims of patent and particularly in absence of convincing evidence that those skilled in art would have found specification nonenabling at time application was filed. 35 U.S.C.A. § 112.

35. Patents ↔99

It is the claimed invention for which enablement is required. 35 U.S.C.A. § 112.

36. Patents ↔101(11)

Patents directed to processes for stretching highly crystalline, unsintered teflon and to products obtained by such processes were not invalid for indefiniteness on ground that some trial and error would be needed to determine lower limits of stretch rate above ten percent per second at various temperatures above 35 degrees centigrade where there was no evidence or finding that undue experimentation was required. 35 U.S.C.A. § 112.

37. Patents ↔99

A patent is not invalid because of need for experimentation. 35 U.S.C.A. § 112.

38. Patents ↔99

A patent is invalid only when those skilled in art are required to engage in undue experimentation to practice the invention. 35 U.S.C.A. § 112.

39. Patents ↔165(1)

Distinguishing what infringes from what doesn't is role of patent claims, not of patent specification. 35 U.S.C.A. § 112.

40. Patents ↔98

A patent applicant may be his own lexicographer.

41. Patents ↔101(11)

In light of disclosure of its calculation in patent specification, term "matrix tensile strength" in claims of patents directed to processes for stretching highly crystalline, unsintered teflon and to products obtained

by such processes was neither indefinite nor nonenabling. 35 U.S.C.A. § 112.

42. Patents \Leftrightarrow 101(11)

Absence from specification of patents directed to processes for stretching highly crystalline unsintered teflon and to products obtained by such processes of a definition for "specific gravity of the solid polymer," which was a part of computation of matrix tensile strength, did not render that computation indefinite where there was no testimony that specific gravity values used in application were not known to persons of ordinary skill in art or could not be calculated or measured. 35 U.S.C.A. § 112.

43. Patents \Leftrightarrow 312(4)

Fraud on the Patent and Trademark Office must be shown by clear and convincing evidence.

44. Patents \Leftrightarrow 312(6)

Accused infringer failed to sustain burden of proving, by clear and convincing evidence, sufficient facts from which fraudulent intent could be inferred from patentee's representations to Patent and Trademark Office that stretching unsintered teflon tape at rate greater than ten percent per second was not novel and that it produced a physical phenomenon.

45. Patents \Leftrightarrow 312(6)

Finding in 1982 that teflon tape-stretching machine invented and patented by patentee's father inherently stretched tape at some time in 1969 at a rate more than ten percent per second did not establish that patentee of patents directed to processes for stretching highly crystalline, unsintered teflon and to products obtained by such processes was aware of that fact in 1975, nor make untrue his statement that to his knowledge such had not been the rate of stretch employed, for purpose of determining fraud on the Patent and Trademark Office.

46. Patents \Leftrightarrow 312(6)

Evidence of patentee's isolated statements did not support the conclusion, for purpose of determining fraud on the Patent and Trademark Office, that patentee of

patents directed to processes for stretching highly crystalline, unsintered teflon and to products obtained by such processes attempted to convince PTO that a physical phenomenon always existed in which stretching at a rate greater than ten percent per second always produced a matrix tensile strength greater than 7,800 pounds per square inch.

47. Patents \Leftrightarrow 325.11(3)

Denial of accused infringer's request for attorney fees on counterclaim for declaratory judgment of patent invalidity in patentee's infringement action was not abuse of discretion.

48. Patents \Leftrightarrow 324.60

Where appellate court reverses a holding of invalidity, and remand is ordered for trial of factual issue of infringement, better practice is for district court to decide both validity and infringement issues when both are contested at trial, enabling conduct of single appeal and disposition of entire case in a single appellate opinion.

David H. Pfeffer, New York City, argued for appellant/cross-appellee; J. Robert Dailley and Janet Dore, New York City, John S. Campbell, Newark, Del., of counsel.

John J. Mackiewicz, Philadelphia, Pa., argued for appellee/cross-appellant. With him on the brief were Dale M. Heist, Philadelphia, Pa., Bernard Ouziel, New York City, of counsel.

Before MARKEY, Chief Judge, and DAVIS and MILLER, Circuit Judges.

MARKEY, Chief Judge.

Appeal from a judgment of the District Court for the Northern District of Ohio holding U.S. Patents 3,953,566 ('566) and 4,187,890 ('890) invalid. We affirm in part, reverse in part, and remand for a determination of the infringement issue.

Background

Tape of unsintered polytetrafluoroethylene (PTFE) (known by the trademark

TEFLON of E.I. du Pont de Nemours, Inc.) had been stretched in small increments. W.L. Gore & Associates, Inc. (Gore), assignee of the patents in suit, experienced a tape breakage problem in the operation of its "401" tape stretching machine. Dr. Robert Gore, Vice President of Gore, developed the invention disclosed and claimed in the '566 and '390 patents in the course of his effort to solve that problem. The 401 machine was disclosed and claimed in Gore's U.S. Patent 3,664,915 ('915) and was the invention of Wilbert L. Gore, Dr. Gore's father. PTFE tape had been sold as thread seal tape, i.e., tape used to keep pipe joints from leaking. The '915 patent, the application for which was filed on October 3, 1969, makes no reference to stretch rate, at 10% per second or otherwise, or to matrix tensile strength in excess of 7,800 psi.

Dr. Gore experimented with heating and stretching of highly crystalline PTFE rods. Despite slow, careful stretching, the rods broke when stretched a relatively small amount. Conventional wisdom in the art taught that breakage could be avoided only by slowing the stretch rate or by decreasing the crystallinity. In late October, 1969, Dr. Gore discovered, contrary to that teaching, that stretching the rods as fast as possible enabled him to stretch them to more than ten times their original length with no breakage. Further, though the rod was thus greatly lengthened, its diameter remained virtually unchanged throughout its length. The rapid stretching also transformed the hard, shiny rods into rods of a soft, flexible material.

Gore developed several PTFE products by rapidly stretching highly crystalline PTFE, including: (1) porous film for filters and laminates; (2) fabric laminates of PTFE film bonded to fabric to produce a remarkable material having the contradictory properties of impermeability to liquid water and permeability to water vapor, the material being used to make "breathable" rainwear and filters; (3) porous yarn for weaving or braiding into other products, like space suits and pump packing; (4) tubes used as replacements for human arteries and veins;

and (5) insulation for high performance electric cables.

On May 21, 1970, Gore filed the patent application that resulted in the patents in suit. The '566 patent has 24 claims directed to processes for stretching highly crystalline, unsintered, PTFE. The processes, *inter alia*, include the steps of stretching PTFE at a rate above 10% per second and at a temperature between about 35°C and the crystalline melt point of PTFE. The '390 patent has 77 claims directed to various products obtained by processes of the '566 patent.

It is effectively undisputed that the present inventions filled a long sought yet unfilled need. The United States Army and the research director of a Garlock, Inc. (Garlock) customer had been looking for and following up every remote lead to a waterproof/breathable material for many years.

It is undisputed that the present inventions enjoyed prompt and remarkable commercial success due to their merits and not to advertising or other extraneous causes.

It is undisputed that the inventions provide the most important synthetic material available for use in vascular surgery, hundreds of thousands of persons having received artificial arteries formed of the patented product since 1976, and that the patented products have unique properties useful in other medical procedures, in communications satellites, radar systems, and electrical applications.

It is undisputed that the major sources of PTFE, ICI and du Pont, greeted the patented product as "magical", "bewitching", "a remarkable new material", and one that "differs from other processed forms of Teflon".

It is undisputed that the patented products were met with skepticism and disbelief by at least one scientist who had worked with PTFE at du Pont for many years and who testified as an expert at trial.

It is undisputed that Garlock first produced an accused product in response to a customer's request for a substitute for the

patented product, that Garlock advertised its accused product as a "new form" of PTFE and as "a versatile new material which provides new orders of performance for consumer, industrial, medical and electrical applications", and that the customer describes that accused product as "a new dimension in rainproof/breathable fabrics".

Proceedings

On Nov. 2, 1979, Gore sued Garlock for infringement of process claims 3 and 19 of the '566 patent, and sought injunctive relief, damages, and attorney fees. Garlock counterclaimed on Dec. 18, 1979, for a declaratory judgment of patent invalidity, non-infringement, fraudulent solicitation, and entitlement to attorney fees. On Feb. 7, 1980, Gore filed a second suit for infringement of product claims 14, 18, 36, 43, 67 and 77 of the '390 patent. In light of a stipulation, the district court consolidated the two suits for trial.

Gore alleged infringement of certain claims by certain products:

<u>'566 patent claims</u>	<u>'390 patent claims</u>	<u>Garlock Product</u>
19	14, 43	film
--	36, 77	laminate
19	18	yarn
--	67	braided packing
8	--	tape

1. 35 U.S.C. § 102(a) and (b) provide:

A person shall be entitled to a patent unless—

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or ...

35 U.S.C. § 103 provides:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordi-

At trial, Garlock addressed only claims 1, 3, 17, and 19 of the '566 patent and claims 1, 9, 12, 14, 18, 35, 36, 43, 67, and 77 of the '390 patent. See Appendix to this opinion.

The district court, in a thorough memorandum accompanying its judgment, and in respect of the '566 patent: (1) found claim 1 anticipated under 35 U.S.C. § 102(a) by Gore's use of its 401 machine and use by the Budd Company (Budd) of a Cropper machine; (2) declared all claims of the patent invalid under 102(b) because the invention had been in public use and on sale more than one year before Gore's patent application, as evidenced by Budd's use of the Cropper machine; (3) held claims 1, 3, 17 and 19 invalid for obviousness under 35 U.S.C. § 103, on the basis of various reference pairings: (a) Japanese patent 13560/67 (Sumitomo) with U.S. patent 3,214,503 (Markwood); (b) U.S. patent 2,776,465 (Smith) with Markwood; or (c) Gore's '915 patent with Sumitomo; and (4) held all claims invalid as indefinite under 35 U.S.C. § 112.¹

In its opinion respecting the '390 patent, the district court held: (1) claims 1, 9, 12, 14, 18, 35, 36, 43, 67 and 77 invalid under §§ 102 and 103 in view of Sumitomo and Smith; and (2) all claims invalid as indefinite under § 112.

nary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

35 U.S.C. § 112 provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. A claim may be written in independent or dependent form, and if in dependent form, it shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim.

The court found that Gore did not commit fraud before the Patent and Trademark Office (PTO), denied Garlock's request for attorney fees, and refrained from deciding the infringement issue.

Issues

Did the district court err in: (1) its holdings of invalidity under §§ 102(a), 102(b), 103 and 112; (2) its finding that Gore did not commit fraud on the PTO; or (3) denying attorney fees.

OPINION

This hard fought and bitterly contested case involved over two years of discovery, five weeks of trial, the testimony of 35 witnesses (19 live, 16 by deposition), and over 300 exhibits. The district court issued an exhaustive 37-page memorandum opinion reflective of a careful, conscientious approach to the determination of the many issues presented at trial.

The record on appeal consists of 2000 pages. The parties' briefs total 199 pages. In those briefs, counsel repeatedly accuse each other of numerous and serious breaches of the duty of candor owed the court. Each cites instances in which the testimony, the findings, and the record are or are said to be quoted in part and out of context. As a result, the usefulness and reliability of the briefs as means of informing the court has been greatly diminished if not destroyed, and careful, time-consuming study of all exhibits and each page of the record has been required.

Appellant cited 80 prior court opinions in its main brief. Appellee's brief totally ignores all but two of those citations, but adds 57 more. Appellant's reply brief cites 126 prior court opinions, 84 earlier cited, 67 newly cited, and 25 of those cited by appellee. Appellee's reply brief cites 17 prior court opinions, 4 earlier cited, 7 newly cited, and 6 of the 147 cited by appellant. Accordingly, 211 prior court opinions have been evaluated in relation to the proof found in the record.

In light of the entire record and the applicable law, we are convinced that Gar-

lock failed to carry its burden of proving all claims of the present patents invalid.

Standard of Review

Where, as here, dispositive legal error occurred in interpretation and application of the patent statute, 35 U.S.C., the parties' arguments relating to the salutary injunction of Fed.Rule Civ.P. 52(a) cannot be controlling on all issues. Findings that "rest on an erroneous view of the law may be set aside on that basis", *Pullman-Standard v. Swint*, 456 U.S. 273, 102 S.Ct. 1781, 42 L.Ed.2d 66 (1982). Thus it is unnecessary here to set aside any probative fact found by the district court on the basis of its being clearly erroneous, or to engage in what would be an inappropriate reweighing of the facts.

Among the legal errors extant in the record, each of which is discussed below, are (1) the invention set forth in each claim was not in each instance considered as a whole; (2) 35 U.S.C. § 102(b) was applied though criteria for its application were not present; (3) the references were not assessed in their entireties; (4) an inherency theory under §§ 102 and 103 was inappropriately applied; (5) that which only the inventor taught was attributed to the prior art; (6) individual steps in prior art processes dealing with materials distinct from those with which the present inventions dealt were erroneously equated to steps in the claimed processes; (7) objective evidence of nonobviousness was disregarded; and (8) the function and application of § 112 were misconstrued.

Because it permeated so much of the district court's analysis, we note more fully its frequent restriction of its consideration to 10% per second rate of stretching, which it called the "thrust of the invention". That approach is repeated throughout Garlock's briefs, which refer repeatedly to the "thrust of the invention", to "the inventive concept", and to the claims "shorn of their extraneous limitations". That facile focusing on the "thrust", "concept", and "shorn" claims, resulted in treating the claims at many points as though they read differently from those actually allowed and in suit.

[1] It is true that Dr. Gore emphasized rapid stretching, for example, as well as the amount of stretch and other process limitations, during prosecution of the application for the '566 patent. Yet it is the claims that measure and define the invention. *Aro Manufacturing Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 339, 81 S.Ct. 599, 600, 5 L.Ed.2d 592 (1961); *Bowser, Inc. v. U.S.*, 388 F.2d 346, 349, 156 USPQ 406, 409 (Ct.Cl.1967).

[2, 3] Each claimed invention must be considered as a whole. 35 U.S.C. § 103; *Schenck, A.G. v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698, 700 (Fed.Cir.1983). In determining obviousness, there is "no legally recognizable or protected 'essential', 'gist', or 'heart' of the invention". *Aro*, 365 U.S. at 345, 81 S.Ct. at 604. A court's restriction of a claimed multi-step process to one step constitutes error, whether done at the behest of a patentee relying on that restriction to establish infringement by one who employs only that one step in a process otherwise distinct, or at the behest of an accused infringer relying on that restriction to establish invalidity by showing that one step in a prior art process otherwise distinct.

(1) *Invalidity*

(a) '566 Patent

(i) § 102(a) and The 401 Machine

It is undisputed that the district court held only claim 1 of the '566 patent to have been anticipated under § 102(a) by operation of the 401 machine in the Gore shop before Dr. Gore's invention in late October 1969. It did so on the deposition testimony of two former Gore employees, documents, and drawings of the 401 machine.

[4] In August, 1969, Gore offered to sell to Export Tool Company (Export) tape "to be made" on the 401 machine. Tape made on the 401 machine was shipped to Export on October 24, 1969. The trial judge found the rolls on the 401 machine were, at least at some point in time before October 1969, spaced less than four feet apart and that the rate of stretch accomplished in operat-

ing that machine (admittedly operated in accord with the description of machine operation in the '915 patent) must have been greater than 10% per second. The district court credited testimony that Teflon 6-c, a highly crystalline form of Teflon, was used because it was the standard resin at the time, and that the tape was stretched at a temperature above 85°C. Thus it cannot be said that the record fails to support the district court's finding that the limitations of claim 1 were met by Gore's operation of the 401 machine before Dr. Gore's asserted "late October, 1969" date of invention. Though he was working with the operation of the 401 machine, Dr. Gore offered no proof that his invention date was before the date of shipment to Export.

[5] Gore, seeking a review here of the evidence, points to certain inadequacies as indicating a failure to meet the required clear and convincing standard under § 102(a). At the time of trial, the district court, bound by precedent then applicable, applied a preponderance of the evidence test. Gore asserts, erroneously, that the clearly erroneous standard does not therefore apply on this appeal. Gore does not, however, point to any basis on which the district court's findings must be held to have been clearly erroneous under the clear and convincing standard. We are not at liberty, of course, to substitute our own for the district court's findings underlying its conclusion that claim 1 is invalid.

[6] Gore's operation of the 401 machine must thus be viewed as a consistent, reproducible use of Dr. Gore's invention as set forth in claim 1, and it is therefore irrelevant that those using the invention may not have appreciated the results. *General Electric Co. v. Jewel Incandescent Lamp Co.*, 326 U.S. 242, 248, 86 S.Ct. 81, 88, 90 L.Ed. 43, 67 USPQ 155, 157-58 (1945). Were that alone enough to prevent anticipation, it would be possible to obtain a patent for an old and unchanged process. *Ansonia Brass & Copper Co. v. Electric Supply Co.*, 144 U.S. 11, 18, 12 S.Ct. 601, 604, 36 L.Ed. 327 (1892); see, *H.K. Regar & Sons, Inc. v.*

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Scott & Williams, Inc., 63 F.2d 229, 231, 17 USPQ 81, 83 (2d Cir.1938).

[7] The nonsecret use of a claimed process in the usual course of producing articles for commercial purposes is a public use. *Electric Storage Battery Co. v. Shimadzu*, 307 U.S. 5, 20, 59 S.Ct. 675, 684, 83 L.Ed. 1071, 41 USPQ 155, 161 (1939), and there was no evidence that any different process was used to produce the articles shipped to Export.

Thus it cannot be said that the district court erred in determining that the invention set forth in claim 1 of '566 patent was known or used by others under § 102(a), as evidenced by Gore's operation of the 401 machine before Dr. Gore's asserted date of that invention.

In view of our affirmance of the judgment reached on claim 1 under 102(a), we need not discuss other asserted grounds of invalidity of claim 1. There was, however, no evidence whatever that the inventions set forth in other claims, of either the '566 or the '390 patent, were known or used by others as a result of Gore's operation of the 401 machine before late October, 1969.

(ii) § 102(b) and the Cropper Machine

In 1966 John W. Cropper (Cropper) of New Zealand developed and constructed a machine for producing stretched and unstretched PTFE thread seal tape. In 1967, Cropper sent a letter to a company in Massachusetts, offering to sell his machine, describing its operation, and enclosing a photo. Nothing came of that letter. There is no evidence and no finding that the present inventions thereby became known or used in this country.

In 1968, Cropper sold his machine to Budd, which at some point thereafter used it to produce and sell PTFE threat seal tape. The sales agreement between Cropper and Budd provided:

*ARTICLE "E"—PROTECTION OF
TRADE SECRETS Etc.*

1. BUDD agrees that while this agreement is in force it will not reproduce any copies of the said apparatus without the

express written permission of Cropper nor will it divulge to any person or persons other than its own employees or employees of its affiliated corporations any of the said known-how or any details whatsoever relating to the apparatus.

2. BUDD agrees to take all proper steps to ensure that its employees observe the terms of Article "E" 1 and further agrees that whenever it is proper to do so it will take legal action in a Court of competent jurisdiction to enforce any one or more of the legal or equitable remedies available to a trade secret plaintiff.

Budd told its employees the Cropper machine was confidential and required them to sign confidentiality agreements. Budd otherwise treated the Cropper machine like its other manufacturing equipment.

[8] A former Budd employee said Budd made no effort to keep the secret. That Budd did not keep the machine hidden from employees legally bound to keep their knowledge confidential does not evidence a failure to maintain the secret. Similarly, that du Pont employees were shown the machine to see if they could help increase its speed does not itself establish a breach of the secrecy agreement. There is no evidence of when that viewing occurred. There is no evidence that a viewer of the machine could thereby learn anything of which process, among all possible processes, the machine is being used to practice. As Cropper testified, looking at the machine in operation does not reveal whether it is stretching, and if so, at what speed. Nor does looking disclose whether the crystallinity and temperature elements of the invention set forth in the claims are involved. There is no evidence that Budd's secret use of the Cropper machine made knowledge of the claimed process accessible to the public.

The district court held all claims of the '566 patent invalid under 102(b), *supra*, note 3, because "the invention" was "in public use [and] on sale" by Budd more than one year before Gore's application for patent. Beyond a failure to consider each of the claims independently, 35 U.S.C. § 282; *Altoona Publix Theatres, Inc. v. American*

Tri-Ergon Corp., 294 U.S. 477, 487, 55 S.Ct. 455, 459, 79 L.Ed. 1005 (1935), and a failure of proof that the claimed inventions as a whole were practiced by Budd before the critical May 21, 1969 date, it was error to hold that Budd's activity with the Cropper machine, as above indicated, was a "public" use of the processes claimed in the '566 patent, that activity having been secret, not public.

Assuming, arguendo, that Budd sold tape produced on the Cropper machine before October 1969, and that that tape was made by a process set forth in a claim of the '566 patent, the issue under § 102(b) is whether that sale would defeat Dr. Gore's right to a patent on the process inventions set forth in the claims.

[9] If Budd offered and sold anything, it was only tape, not whatever process was used in producing it. Neither party contends, and there was no evidence, that the public could learn the claimed process by examining the tape. If Budd and Cropper commercialized the tape, that could result in a forfeiture of a patent granted them for their process on an application filed by them more than a year later. *D.L. Auld Co. v. Chroma Graphics Corp.*, 714 F.2d 1144, at 1147-48 (Fed.Cir.1988); See *Metallizing Engineering Co. v. Kenyon Bearing & Auto Parts Co.*, 158 F.2d 516, 68 USPQ 54 (2d Cir.1946). There is no reason or statutory basis, however, on which Budd's and Cropper's secret commercialization of a process, if established, could be held a bar to the grant of a patent to Gore on that process.

[10] Early public disclosure is a linchpin of the patent system. As between a prior inventor who benefits from a process by selling its product but suppresses, conceals, or otherwise keeps the process from the public, and a later inventor who promptly files a patent application from which the public will gain a disclosure of the process, the law favors the latter. See *Horwath v. Lee*, 564 F.2d 948, 195 USPQ 701 (CCPA 1977). The district court therefore erred as a matter of law in applying the statute and in its determination that Budd's secret use of the Cropper machine and sale of tape

rendered all process claims of the '566 patent invalid under § 102(b).

(iii) § 103

In considering claims 1, 3, 17, and 19 of the '566 patent, the district court recognized that analysis of the obviousness issue under § 103 requires determination of the scope and content of the prior art, the differences between the prior art and the claims at issue, and the level of ordinary skill in the pertinent art. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S.Ct. 684, 693, 15 L.Ed.2d 545, 148 USPQ 459, 467 (1966).

[11] In its consideration of the prior art, however, the district court erred in not taking into account the import of the markedly different behavior of PTFE from that of conventional thermoplastic polymers clearly established and undisputed on the record, and in thus disregarding the unpredictability and unique nature of the unsintered PTFE to which the claimed inventions relate, *In re Whiton*, 420 F.2d 1082, 164 USPQ 455 (CCPA 1970); in considering claims in less than their entireties, *Schenck, supra*; and in considering the references in less than their entireties, i.e., in disregarding disclosures in the references that diverge from and teach away from the invention at hand. *In re Kuderna*, 426 F.2d 385, 165 USPQ 575 (CCPA 1970).

Invalidity of claim 1 under § 102(a) having been determined, it is unnecessary to discuss in detail the applicability of § 103 to that claim. If claim 1 had not been held anticipated under § 102(a) in light of operation of the 401 machine, it is clear from the discussion here that claim 1 could not properly have been held invalid under § 103.

Claim 8 depends from and thus incorporates claim 1 but specifies a rate of stretch of 100% per second. Claim 17 also depends from claim 1 and specifies an amount of stretch of about twice the original length. Claim 19 depends from claim 17 but specifies an amount of stretch of about five times the original length.

U.S. patent 2,988,961 to Titterton, Volume 18 of the *Encyclopedia of Polymer*

Science and Technology (1970), the Sumitomo patent, and witnesses for both parties, establish that teachings related to conventional thermoplastic polymers are inapplicable to PTFE.

Articles by Dogliotti and Yelland, *Effect of Strain Rate on the Viscoelastic Properties of High Polymeric Fibrous Materials*, 4 *High Speed Testing* 211 (1964) and Robinson and Graham, *Methods of Characterization of Polymeric Materials by High Speed Testing Techniques*, 5 *High Speed Testing* 261 (1966), teach that conventional plastics and sintered PTFE can be stretched further if stretched slowly. Dr. Gore demonstrated at trial and at oral argument before us that an attempt to stretch highly crystalline, unsintered PTFE slowly results in breakage, and that rapid stretching produces a greatly lengthened rod of soft, flexible material.

The '566 patent contains an example of stretching an article to 16 times its length. Smith and the '915 patent teach that PTFE could not be stretched beyond four times its length without heating it to above its crystalline melt temperature, a step avoided by Dr. Gore and as set forth in the claims.

Sumitomo teaches that there is a length limit to stretching unsintered PTFE, and does not suggest what that limit might be. Markwood, U.S. patent 3,208,100 to Nash (Nash), and U.S. patent 2,823,421 to Scarlett (Scarlett) teach that non-PTFE thermoplastics can be stretched rapidly and to extended lengths, and also teach reduction, elimination, or avoidance of crystallinity before stretching.

[12] The disclosure in the Smith and '915 patents that a PTFE article may be stretched to as much as four times its length encompasses the step of stretching to twice its length set forth in claim 17 and establishes that such step would have been obvious.

Claims 8 and 19 must be considered individually and separately. 35 U.S.C. § 282. Nowhere, in any of the references, is it taught or suggested that highly crystalline, unsintered PTFE could be stretched at a

rate of about 100% per second as required by asserted claim 3. Nor is it anywhere suggested that by rapid stretching a PTFE article be stretched to more than five times its original length as required by asserted claim 19. On the contrary, the art as a whole teaches the other way.

In concluding that obviousness was established by the teachings in various pairs of references, the district court lost sight of the principle that there must have been something present in those teachings to suggest to one skilled in the art that the claimed invention before the court would have been obvious. *In re Bergel*, 292 F.2d 955, 956-57, 130 USPQ 206, 208 (CCPA 1961); *In re Sponnole*, 405 F.2d 578, 585, 160 USPQ 237, 244 (CCPA 1969).

The court's pairing of Sumitomo and Markwood disregarded, as above indicated, the undisputed evidence that the unsintered PTFE of Sumitomo does not respond to the conventional plastics processing of Markwood and the art recognition of that fact. *Whiton, supra*, 420 F.2d at 1085, 164 USPQ at 457.

In evaluating claim 19, for example, the pairing disregarded Sumitomo's limited length of stretch teaching. In evaluating claim 3, the court recognized that Sumitomo made no mention of rate of stretch. Looking to Markwood to supply that teaching disregarded not only the conventional plastics-unsintered PTFE distinction but also the clear divergence of Markwood's teaching that crystallinity must be reduced or avoided from the presence of "highly crystalline" in all claims of the '566 patent.

Similarly, and for many of the same reasons, the pairing of Markwood's and Smith's teachings was an inappropriate basis for concluding that the processes set forth in claims 3 and 19 would have been obvious. As above indicated, Markwood's rapid stretching of conventional plastic polypropylene with reduced crystallinity would not suggest rapid stretching of highly crystalline PTFE, in light of teachings in the art that PTFE should be stretched slowly. The Smith patent is owned by du Pont, where Dr. Gore's process invention was considered

to have produced a "remarkable new material". That circumstance is not surprising, for Smith, though dealing with PTFE, says not a word about any rate of stretch.

Lastly, the pairing of Sumitomo and the '915 patent suffers from the same shortcomings. The pairing resulted from a hypothetical set forth in Garlock's post trial brief, and was based on no testimony or other evidence in the record. In respect of claim 3, neither reference mentions rate of stretch or suggests its importance. In respect of claim 19 both references point away from the claimed invention in their limited length-of-stretch teachings. The '915 patent states: "the 65 percent expanded material could be expanded a second time for an additional 65 percent expansion or a total length increase ratio of 1:2.72 [less than three times the original length]. However, great care was necessary to obtain a uniformly expanded material at these very great expansion ratios." Thus the '915 patent suggests that the amount of stretch of 500% set forth in claim 19 (more than five times the original length) is not possible.

As indicated, Sumitomo and Smith are totally silent respecting the rate of stretch, and there is simply no teaching in the art that would suggest to one of ordinary skill that Markwood's fast stretching of other thermoplastics could or should be employed in the process of treating PTFE taught by either Sumitomo or Smith. Indeed, Smith not only says nothing about rate of stretch, its preferred teaching is away from other elements of the inventions set forth in claims 3 and 19. Smith discloses that stretching should be done after the PTFE is heated above its crystalline melting point and with decreased crystallinity. Smith teaches:

Below about 300°C it is *not* possible to draw more than about 4× [times] and while such draw ratios can be attained around 300°C and below the polymer's crystalline melting point with resultant orientation and improved properties it is preferred to use temperatures at or above

the polymer's crystalline melting point. (Emphasis added).

Nash teaches that the film should be plasticized, i.e., made more viscous, before stretching. Contrary to that teaching, Dr. Gore did not reduce crystallinity before increasing the rate of stretch, but maintained the unsintered PTFE "highly crystalline" while stretching at a 100% per second rate and to more than five times, as set forth respectively in claims 3 and 19.

On the entire record and in view of all the references, each in its entirety, it is clear that a person of ordinary skill confronted with a PTFE tape breakage problem would have either slowed the rate of stretching or increased the temperature to decrease the crystallinity. Dr. Gore did neither. He proceeded contrary to the accepted wisdom of the prior art by dramatically increasing the rate and length of stretch and retaining crystallinity. That fact is strong evidence of nonobviousness. *United States v. Adams*, 388 U.S. 89, 86 S.Ct. 708, 15 L.Ed.2d 572 (1966).

Having learned the details of Dr. Gore's invention, the district court found it within the skill of the art to stretch other material rapidly (Markwood); to stretch PTFE to increase porosity (Sumitomo); and to stretch at high temperatures (Smith). The result is that the claims were used as a frame, and individual, naked parts of separate prior art references were employed as a mosaic to recreate a facsimile of the claimed invention. At no point did the district court, nor does Garlock, explain why that mosaic would have been obvious to one skilled in the art in 1969, or what there was in the prior art that would have caused those skilled in the art to disregard the teachings there found against making just such a mosaic. On the contrary, the references and the uncontested testimony, as above indicated, established that PTFE is *sui generis*. It is not surprising, therefore, that, unlike the situation in *Stratoflex, Inc. v. Aeroquip Corp.*, 718 F.2d 1580, 218 USPQ 871 (Fed.Cir.1988), there was no testimony and no finding that one skilled in the art would transfer conventional thermoplastic

processes to those for unsintered PTFE, or would have been able to predict what would happen if they did.

To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.

It is difficult but necessary that the decisionmaker forget what he or she has been taught at trial about the claimed invention and cast the mind back to the time the invention was made (often as here many years), to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art. Had that been here done the inventions set forth in the claims 3 and 19 of the '566 patent could only have been held non-obvious to those skilled in the art at the time those claimed inventions were made.

[13, 14] Error in visualizing the burden of proof on obviousness may have contributed to the court's application here of the prior art. Adopting the phrase from earlier precedents, the court said "the presumption [of validity] is weakened greatly where the Patent Office has failed to consider pertinent prior art". That is not the law of established precedent in this court. *SSIH Equipment S.A. v. ITC*, 718 F.2d 365, 218 USPQ 678, 687 (Fed.Cir.1983); *Solder Removal Co. v. ITC*, 582 F.2d 628, 633, 199 USPQ 129, 133, n. 9 (CCPA 1978). The presumption has no separate evidentiary value. It cautions the decisionmaker against a rush to conclude invalidity. Submission of additional art that is merely "pertinent" does not dispel that caution. It is difficult to imagine a patent law suit in which an accused infringer is unable to add some new "pertinent" art. The inescapable burden of persuasion on one who would prove invalidity, however, remains throughout the trial. 35 U.S.C. § 282.

The burden of proving invalidity may of course be facilitated by prior art that is

more pertinent than that considered by the PTO. That did not happen here. In the present case, Sumitomo, Smith, and the '915 patent were among references considered by the PTO. Other references referred to as not considered were merely cumulative, disclosing nothing not disclosed in references that were considered by the PTO. The Canadian counterpart of Nash was considered by the PTO. The relevant disclosures of Markwood appear in Sandiford patent 3,544,671 and Paratheon patent 3,637,906, both considered by the PTO. The Russian Author's Certificate 240,997, assuming its status as prior art and whatever the material with which it dealt, contributed nothing beyond the teachings of the '915 patent considered by the PTO.

[15] As discussed more fully below, the district court erred in specifically declining to consider the objective evidence of nonobviousness. *In re Sernaker*, 702 F.2d 989, 996, 217 USPQ 1, 7 (Fed.Cir.1983). That evidence can often serve as insurance against the insidious attraction of the siren hindsight when confronted with a difficult task of evaluating the prior art. Though the prior art evidence here pointed more in the direction of nonobviousness than obviousness, the objective evidence may tend, as it did in *Sernaker*, *supra*, to reassure the decisionmaker.

[16] In sum, the district court erred as a matter of law on this record in concluding that Garlock had met its burden of proving that the inventions of claims 3 and 19 of the '566 patent would have been obvious.

(b) '390 patent

(i) § 102

The district court found product claims 1, 9, 12, 14, 18 and 43 inherently anticipated because it found that the microstructure of nodes interconnected by fibrils is an inherent characteristic of paste-extruded PTFE products resulting from the process disclosed in Smith. The court found the first four of those claims and claim 43, plus claims 35, 36, 67 and 77 inherently anticipa-

ted because high strength PTFE products are inherent in the examples of Sumitomo.

The teachings of Smith include neither a disclosure nor a suggestion of "porous" products having a "microstructure characterized by nodes interconnected by fibrils" as required by the claims found to have been anticipated by Smith.

The teachings of Sumitomo do not include a disclosure of products having "a matrix tensile strength . . . above about 7,800 psi" as required by the claims found to have been anticipated by Sumitomo.

[17] Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *Soundscraper Corp. v. U.S.*, 360 F.2d 954, 960, 148 USPQ 298, 301, adopted, 149 USPQ 640 (Ct.Cl.1966). Neither Smith nor Sumitomo disclose an invention set forth in any claim of the '890 patent.

The incongruity in findings that the different processes of Smith and Sumitomo each inherently produced identical products is striking.

Garlock attempted with expert testimony to overcome the prior art shortcomings as proof of anticipation. Gore rebutted with its own expert testimony. It is unnecessary, however, to resolve apparent conflicts in the divergent testimony, much if not all of which took the form of pure unsupported assertion. No *inter partes* tests in which the Smith and Sumitomo processes were conducted are of record. No products of those processes were placed in evidence, and there was, of course, no analysis of any such evidentiary products.

Nor is it necessary to evaluate the inappropriate disparagement in Garlock's brief of Dr. Sperati as a "friend" of Gore.

[18] Given the unique nature of unsintered PTFE, we are not persuaded that the "effect" of the processes disclosed in Smith and Sumitomo, an "effect" undisclosed in those patents, would be always to inherently produce or be seen always to produce products meeting all of the claim limitations. Anticipation of inventions set forth in product claims cannot be predicated on

mere conjecture respecting the characteristics of products that might result from the practice of processes disclosed in references. *In re Felton*, 484 F.2d 495, 500, 179 USPQ 295, 298 (CCPA 1978). It is clear that the teachings of neither Smith nor Sumitomo place the products claimed in the '890 patent in possession of the public.

[19] The teachings of Smith and Sumitomo are so unacceptably vague concerning characteristics of products produced by their respective processes as not to support an anticipation rejection. That fact is confirmed by the PTO's having fully considered those references and by its having issued the '890 patent over them.

[20, 21] Garlock's assertion that it employs a process covered by the Smith patent, if true, is irrelevant. The '890 patent was allowed over Smith as a reference. Assuming Smith a dominating patent, the rule of law is clear that an accused infringer's employment of the process of a dominating patent does not render that employment an anticipation of an invention described and claimed in an improvement patent. As indicated, there is no present record basis for finding that the Smith process in itself necessarily and inherently results in the products, each considered in its entirety, in the claims of the '890 patent. The testimony of Garlock's expert about *ex parte* tests, the records of which he destroyed before trial, cannot serve as such a basis. The effusive praise of Dr. Gore's claimed products by the owner of the Smith patented process would appear, on the contrary, to confirm the action of the PTO in issuing the '890 patent.

[22] Garlock has not met its burden of showing that claims 1, 9, 12, 14, 18, and 48 are anticipated by Smith or that claims 1, 9, 12, 14, 35, 36, 43, 67, and 77 are anticipated by Sumitomo.

(ii) § 103

[23, 24] The scope and content of the prior art and level of ordinary skill, discussed above in relation to the '566 patent,

would be the same for the '390 patent. The district court did not, however, nor does Garlock, apply the *Graham* criteria, *supra*, to the '390 claims, apparently assuming that the claimed products, having been found inherent in the processes of Sumitomo and Smith, would have been obvious in view of those references. If so, that was error. Inherency and obviousness are distinct concepts. *In re Spormann*, 363 F.2d 444, 448, 150 USPQ 449, 452 (CCPA 1966).

In discussing inherency the district court did recognize differences between Smith's disclosure and the inventions set forth in claims 1, 9, 12, 14, 18, and 48, i.e., the absence from Smith of a description of the products of Smith's process as porous and the absence from Smith of a disclosure that those products have a microstructure characterized by nodes interconnected by fibrils.

Similarly, a difference between Sumitomo's disclosure and the inventions set forth in claims 1, 9, 12, 14, 35, 36, 48, 67, and 77 was recognized in the absence from Sumitomo of a quantification of the matrix tensile strengths of the products of Sumitomo's process. The district court also discussed differences between the dependent claims and the prior art. Because we conclude that the independent claims of the '390 patent are patentable over the art of record, we need not discuss the dependent claims.

[25] Having determined that the invention would have been obvious in view of the process of either Smith or Sumitomo, the district court did not discuss the strong showing of objective evidence of nonobviousness here present, saying with respect to one part of such evidence, "no amount of commercial success can save it." That approach was error. All evidence bearing on the issue of obviousness, as with any other issue raised in the conduct of the judicial process, must be considered and evaluated before the required legal conclusion is reached. *Stratoflex, supra*, 718 F.2d 1530, 218 USPQ at 879.

[26] The objective evidence of nonobviousness, i.e., the "indicia" of *Graham, supra*, may in a given case be entitled to more

weight or less, depending on its nature and its relationship to the merits of the invention. It may be the most pertinent, probative, and revealing evidence available to aid in reaching a conclusion on the obvious/nonobvious issue. It should when present always be considered as an integral part of the analysis.

Gore's fabric laminates, for example, as set forth in claims 36 and 77, satisfied a long felt need for a material having the contradictory properties of being simultaneously breathable (allowing water vapor or perspiration to pass) and waterproof. The record establishes that such a material had long been sought by makers of rainwear and outerwear, and by the U.S. Army as well. That Gore's fabric laminates filled that need is attested by the rise in their annual dollar sales from zero to seven million in the first five years of their availability.

Gore's PTFE tubes for replacement of human arteries and veins, also satisfied a long felt need. The uncontradicted evidence establishes that Gore's PTFE tubes hold blood without leaking, need not be pre-clotted with the patient's blood, are chemically inert, and, being breathable, are less likely to cause an air embolism. The value and uniqueness of those four properties make Gore's PTFE tubes, as described in unchallenged testimony, "the most important synthetic material presently existing" in vascular surgery, and, along with other evidence in the record, reflect the intended working of the patent system.

As discussed above, current annual sales of over sixty million dollars are attributable to the merits of the products claimed in the '390 patent. Considering the long felt need for those products and the obvious commercial advantage to be gained by meeting that need, it is reasonable to conclude that the claimed products of the '390 patent would not have been obvious to persons of ordinary skill in the art at the time the claimed inventions were made.

As above indicated, the praise which greeted the products claimed in the '390 patent from PTFE suppliers, including the

owner of the Smith patent, is further objective evidence of nonobviousness.

[27] Garlock's appeal argument that the '390 claims are invalid because the recited minimum matrix tensile strengths are not "critical" is without merit. A claim to a new product is not legally required to include critical limitations. *In re Miller*, 441 F.2d 689, 696, 169 USPQ 597, 602 (CCPA 1971). The '390 claims are not drawn to optimization of ingredients or ranges within broad prior art teachings, but to new porous PTFE products of particular characteristics.

[28] In sum, and in view of the difficulty of working with unsintered PTFE and its unpredictable response to various processing techniques, the vagueness of Smith and Sumitomo concerning the products produced by those processes, the filling of at least two long felt needs and the commercial success described above, we conclude that the inventions set forth in claims 1, 9, 12, 14, 18, 35, 36, 43, 67, and 77 of the '390 patent would not have been obvious to those skilled in the art at the time those inventions were made.

(c) § 112 and the '566 and '390 patents

The patents in suit resulted from a single application and thus have substantially identical specifications. The holding of invalidity on the basis of § 112 is common to both patents.

The district court found that the patents did not disclose sufficient information to enable a person of ordinary skill in the art to make and use the invention, as required by § 112, first paragraph, and that certain claim language was indefinite, presumably in light of § 112, second paragraph, because: (1) there was no definition in the specification of "stretch rate", different formulae for computing stretch rate having been developed and presented at trial; (2) there was no way taught in the specification to calculate the minimum rate of stretch above 35°C; (3) the phrase "matrix tensile strength" is indefinite; and (4) the

phrase "specific gravity of the solid polymer" is indefinite.

[29, 30] The findings rest on a misinterpretation of § 112, its function and purpose. The district court considered whether certain terms would have been enabling to the public and looked to formula developments and publications occurring well after Dr. Gore's filing date in reaching its conclusions under § 112. Patents, however, are written to enable those skilled in the art to practice the invention, not the public, *In re Storrs*, 245 F.2d 474, 478, 114 USPQ 293, 296-97 (CCPA 1957), and § 112 speaks as of the application filing date, not as of the time of trial. *In re Mott*, 539 F.2d 1291, 1296, 190 USPQ 586, 541 (CCPA 1976). There was no evidence and no finding that those skilled in the art would have found the specification non-enabling or the claim language indefinite on May 21, 1970, when the application which resulted in issuance of Dr. Gore's patents was filed. Indeed, the expert quoted by the district court and whose testimony was primarily relied upon respecting formulae, was still in school at that time.

[31] There is uncontradicted evidence in the record that at the time the application was filed "stretch rate" meant to those skilled in the art the percent of stretch divided by the time of stretching, and that the latter was measurable, for example, with a stopwatch. Concern for the absence from the specification of a formula for calculating stretch rate is therefore misplaced, and the post-filing date development of varying formulae, including Dr. Gore's later addition of a formula in his corresponding Japanese patent, is irrelevant.

[32] Section 112 requires that the inventor set forth the best mode of practicing the invention known to him at the time the application was filed. Calculating stretch rate at that time was accomplished by actually measuring the time required to stretch the PTFE material. That was the only mode then used by the inventor, and it worked. The record establishes that calculation by that mode would have been em-

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ployed by those of ordinary skill in the art at the time the application was filed. As indicated, Dr. Gore's disclosure must be examined for § 112 compliance in light of knowledge extant in the art on his application filing date.

[33] The district court, though discussing enablement, spoke also of indefiniteness of "stretch rate", a matter having to do with § 112, second paragraph, and relevant in assessment of infringement. The use of "stretching . . . at a rate exceeding about 10% per second" in the claims is not indefinite. Infringement is clearly assessable through use of a stopwatch. No witness said that could not be done. As above indicated, subsequently developed and therefore irrelevant formulae cannot be used to render non-enabling or indefinite that which was enabling and definite at the time the application was filed.

[34, 35] Similarly, absence from the specification of a method for calculating the minimum rate of stretch above 35°C does not render the specification non-enabling. The specification discloses that "[t]he lower limit of expansion rates interact with temperature in a roughly logarithmic fashion, being much higher at higher temperatures." Calculation of minimum stretch rate above 35°C is nowhere in the claims, and it is the claimed invention for which enablement is required. The claims require stretching at a rate greater than 10% per second at temperatures between 35°C and the crystalline melt point of unsintered PTFE. That the minimum rate of stretch may increase with temperature does not render non-enabling Dr. Gore's specification, particularly in the absence of convincing evidence that those skilled in the art would have found it non-enabling at the time the application was filed.

[36-38] The district court invalidated both patents for indefiniteness because of its view that some "trial and error" would be needed to determine the "lower limits" of stretch rate above 10% per second at various temperatures above 35°C. That was error. Assuming some experimenta-

tion were needed, a patent is not invalid because of a need for experimentation. *Minerals Separation, Ltd. v. Hyde*, 242 U.S. 261, 270-71, 37 S.Ct. 82, 86, 61 L.Ed. 286 (1916). A patent is invalid only when those skilled in the art are required to engage in undue experimentation to practice the invention. *In re Angstadt*, 537 F.2d 498, 508-04, 190 USPQ 214, 218 (CCPA 1976). There was no evidence and the court made no finding that undue experimentation was required.

[39] Moreover, the finding here rested on confusion of the role of the specification with that of the claims. The court found that the specification's failure to state the lower limit of stretch rate (albeit above 10% per second) at each degree of temperature above 35°C (a requirement for at least hundreds of entries in the specification) did not "distinguish processes performed above the 'lower limit' from those performed below the 'lower limit' ". The claims of the '390 patent say nothing of processes and lower limits. Distinguishing what infringes from what doesn't is the role of the claims, not of the specification. It is clear that the specification is enabling, *In re Storrs, supra*, and that the claims of both patents are precise within the requirements of the law. *In re Moore*, 489 F.2d 1232, 169 USPQ 236 (CCPA 1971).

[40, 41] The finding that "matrix tensile strength" is indefinite, like the other findings under § 112, appears to rest on a confusion concerning the roles of the claims and the specification. While finding "matrix tensile strength" in the claims indefinite, the district court at the same time recognized that the specification itself disclosed how to compute matrix tensile strength, in stating "to compute matrix tensile strength of a porous specimen, one divides the maximum force required to break the sample by the cross sectional area of the porous sample, and then multiplies this quantity by the ratio of the specific gravity of the solid polymer divided by the specific gravity of the porous specimen." Further, the specification provided the actual matrix tensile strength in several ex-

amples. It is well settled that a patent applicant may be his own lexicographer. In light of the disclosure of its calculation in the specification, we cannot agree that "matrix tensile strength" is either indefinite or non-enabling.

[42] Nor does absence from the specification of a definition for "specific gravity of the solid polymer", a part of the computation of matrix tensile strength, render that computation indefinite. It is undisputed that in the many examples in the application the specific gravity values used for unsintered and sintered PTFE were 2.8 and 2.2, respectively. There was no testimony that those values were not known to persons of ordinary skill in the art or could not be calculated or measured. There is simply no support for the conclusion that "specific gravity of the solid polymer" is indefinite or that absence of its definition renders the specification non-enabling. See *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

We conclude that Garlock has failed to prove that at the time the application was filed, the specification was not enabling or that the claims were indefinite within the meaning of § 112.

(2) Fraud

[43] Fraud must be shown by clear and convincing evidence. *Norton v. Curtiss*, 433 F.2d 779, 797, 167 USPQ 532, 546-47 (CCPA 1970).

The state of mind of the one making the representations is probably the most important of the elements to be considered in determining the existence of "fraud." . . . Good faith and subjective intent, while they are to be considered, should not necessarily be made controlling. Under ordinary circumstances, the fact of misrepresentation coupled with proof that the party making it had knowledge of its falsity is enough to warrant drawing the inference that there was a fraudulent intent. Where public policy demands a complete and accurate disclosure it may suffice to show nothing more than that the misrepresentations were made in an atmosphere of gross

negligence as to their truth. [emphasis in original].

Norton, 433 F.2d at 795-96, 167 USPQ at 545; see, Miller, *Fraud on the PTO*, 58 JPOS 271 (1976).

[44] Garlock alleges fraud in Gore's representations that stretching PTFE tape at a rate greater than 10% per second was novel and that it produces a physical phenomenon. The district court found the evidence insufficient to establish that Gore had a specific intent to defraud the PTO. No basis exists for our overturning that finding. Accordingly, we agree with the district court that Garlock has failed to sustain its heavy burden of proving, by clear and convincing evidence, sufficient facts from which fraudulent intent can be inferred.

Garlock points to a September 4, 1975 Gore affidavit filed in the PTO that stated:

2. Prior to my invention disclosed in the captioned patent application, during production of expanded PTFE products by W.L. Gore & Associates, Inc., the rate of stretching was neither measured nor controlled and to my knowledge did not involve stretching of unsintered PTFE at a rate exceeding about 10% per second. (emphasis in original)

No finding of the district court and no evidence of record establishes that that statement was made in reckless disregard of facts from which an intent to defraud may be inferred.

[45] The district court's finding in 1982 that the 401 machine inherently stretched tape at some time in 1969 at a rate more than 10% per second, does not establish that Dr. Gore was aware of that fact in 1975, nor does it make untrue his statement that to his knowledge that had not been the rate of stretch employed. Nor does the district court's finding conflict with Dr. Gore's statement that the rate of stretching was neither measured nor controlled in the Gore shop before his invention of the claimed process as a whole.

[46] Nor does the evidence of isolated statements support Garlock's contention

that Dr. Gore attempted to convince the PTO that a physical phenomenon always existed in which stretching at a rate greater than 10% per second always produced a matrix tensile strength greater than 7300 psi. On the contrary, Dr. Gore set forth in his specification examples indicating that some samples broke, ruptured, or disintegrated.

(3) Attorney's Fees

[47] The district court did not abuse its discretion in denying Garlock its request for attorney fees.

Infringement

[48] Where, as here, an appellate court reverses a holding of invalidity, and remand is ordered for trial of the factual issue of infringement, an inefficient use of judicial resources results if the second judgment is appealed. The better practice would therefore be for the district court to decide both the validity and infringement issues when both are contested at the trial, enabling the conduct of a single appeal and disposition of the entire case in a single appellate opinion.

Resolution of the infringement issue at trial may also overlap with resolution of the validity issue, where, for example, the claimed invention was or was not copied by the validity challenger, or the challenger substituted the claimed invention for freely available prior art processes or products, *Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45, 56, 48 S.Ct. 322, 825, 67 L.Ed. 528 (1923), or an assertion of non-enablement may conflict with the ease with which the accused infringer may be shown to have practiced the invention as taught in the patent. *Eibel, supra*, 261 U.S. at 65-66, 48 S.Ct. at 829.

The district court having declined to decide the infringement issue, Gore suggests that the record here is sufficient to warrant our deciding it now. With reluctance in view of the length and bitter nature of the present litigation, we decline the suggestion. In so doing, we imply nothing of our view on the issue. Nor do we intend any implication that the district court could not

itself determine the infringement issue on the present record. Infringement of particular claims of two patents was asserted. None of those claims has been finally held invalid. Assuming their continued assertion, infringement must be decided with respect to each asserted claim as a separate entity. *Altoona, supra*, 294 U.S. at 487, 55 S.Ct. at 459. Those factual determinations should be made in the first instance by the district court.

Decision

The holdings of invalidity of claim 1 of the '566 patent under § 102(a) and of claim 17 of the '566 patent under § 103, the determination that Gore did not commit fraud on the PTO, and the denial of attorney fees, are affirmed; the holdings that all claims of the '566 patent are invalid under § 102(b), that claims 3 and 19 of the '566 patent are invalid under § 103, and that all claims of the '566 patent are invalid under § 112, are reversed. The holdings that claims 1, 9, 12, 14, 18, 35, 36, 43, 67, and 77 of the '390 patent are invalid under §§ 102 and 103, and that all claims of the '390 patent are invalid under § 112, are reversed. The case is remanded for determination of the infringement issue.

AFFIRMED IN PART, REVERSED IN PART, AND REMANDED.

Appendix

Claims of the '566 patent discussed at trial:

1. A process for the production of a porous article of manufacture of a polymer of tetrafluoroethylene which process comprises expanding a shaped article consisting essentially of highly crystalline poly (tetrafluoroethylene) made by a paste-forming extrusion technique, after removal of lubricant, by stretching said unsintered shaped article at a rate exceeding about 10% per second and maintaining said shaped article at a temperature between about 35°C. and the crystalline melt point of said tetrafluoroethylene polymer during said stretching.

Appendix—Continued

3. The process of claim 1 in which the rate of stretch is about 100% per second.

17. The process of claim 1 in which the shaped article is expanded such that its final length in the direction of expansion is greater than about twice the original length.

19. The process of claim 17 in which said final length is greater than about five times the original length.

Claims of the '390 patent discussed at trial:

1. A porous material consisting essentially of highly crystalline polytetrafluoroethylene polymer, which material has a microstructure characterized by nodes interconnected by fibrils and has a matrix tensile strength in at least one direction above about 73,00 psi.

9. A porous material consisting essentially of polytetrafluoroethylene polymer, which material has a microstructure characterized by nodes interconnected by fibrils and has a matrix tensile strength in at least one direction above 9290 psi, which material has been heated to a temperature above the crystalline melt point of said polymer and has a crystallinity below about 95%.

12. A porous material in accordance with claim 9 which is in the form of a shaped article.

14. A product in accordance with claim 12 which is in the form of a film.

18. A product in accordance with claim 12 which is in the form of continuous filaments.

35. A laminated structure comprising (a) a first shaped article formed of a porous material made of a tetrafluoroethylene polymer, which material has a microstructure characterized by nodes interconnected by fibrils and has a matrix tensile strength in at least one direction above about 7,300 psi, and (b) a second shaped article bonded to said first shaped article.

36. The structure of claim 35 in which said first shaped article is formed of a

1. The 401 machine was used under the prior '915 patent (issued to Wilbert Gore) which

porous material which has a matrix tensile strength in at least one direction of at least 9290 psi, and has a crystallinity below about 95%.

43. A porous material made of a tetrafluoroethylene polymer, which material has a microstructure characterized by nodes interconnected by fibrils, which material (a) has a matrix tensile strength in at least one direction above about 9290 psi, (b) has been heated to a temperature above 327°C. and has a crystallinity below about 95%, and (c) has a dielectric constant of 1.2–1.8.

67. An impregnated structure comprising

(a) a shaped article formed of a porous material made of a tetrafluoroethylene polymer which material has a microstructure characterized by nodes interconnected by fibrils and a matrix tensile strength in at least one direction above about 9290 psi, and

(b) a polymer impregnated within the pores of the said shaped article.

77. The structure of claim 35 in which the first shaped article is a sheet having pores that will pass a gas but will not pass liquid water.

DAVIS, Circuit Judge, concurring in the result in part and dissenting in part.

I concur in the result on (1) the validity of the '390 patent under §§ 102–103; (2) the validity of the '390 patent under § 112; (3) the invalidity of claims 1 and 17 of the '566 patent; (4) lack of fraud on the Patent and Trademark Office; and (5) denial of attorney's fees. I disagree and dissent as to the validity of claims 3 and 19 of the '566 patent.

1. The process invention embodied in claim 1 of the '566 patent was known, through use of the 401 machine in the Gore shop, well before the "invention date" (claimed by Robert Gore, the inventor) of October 1969.¹ As such, the claimed invention was invalid on at least three grounds: (i) it was anticipated and therefore would

contain no reference to the significance of the rate of stretch.

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have been obvious (under 35 U.S.C. § 103) at the time of the claimed invention date; (ii) the invention was "in public use" by the Gore shop (under 35 U.S.C. § 102(b)) more than one year prior to the patent application (*i.e.*, prior to May 21, 1969); and (iii) the invention (made by Robert Gore) was known to and used "by others in this country" (35 U.S.C. § 102(a)) before the claimed invention date of October 1969, *i.e.* the invention was used by Wilbert Gore and others in the Gore shop before the October date.²

The critically important aspect of the invention of the '566 patent is the stretching of PTFE at a rate above 10% per second.³ Robert Gore testified that he conceived this invention no earlier than October 1969 (and we have the right to take him at his word),⁴ but the facts found by the District Court plainly show that the Gore shop was in fact practicing that invention considerably earlier.

The District Court found that in the 401 machine the distance between the stretch rollers controls the rate of stretch; a shorter distance results in a higher rate of stretch; for the process described in the '915 patent to be practiced with a rate of stretch *below* 10% per second, the distance between the stretch rollers would have to be greater than five feet; if the distance is less than four feet, the rate of stretch is greater than 10% per second; the machine drawings used to construct the 401 machine indicate that the distance between the stretch rollers was eight inches; a Gore employee testified that "I am reasonably

2. Aside from the bases I discuss, I do not reach the other grounds asserted for invalidity of the '566 patent.

3. Before the PTO Robert Gore concededly referred to this as "critical" to his invention or as *his* "invention."

4. The District Court found that October 1969 was the earliest date Robert Gore asserts for his conception of the invention in the '566 patent.

5. The Gores (Robert and Wilbert) testified at trial that the distance was five feet but there is no indication that the trial court (which did not

sure that no effective [stretch] rolls in question would have been more than three feet simply because of the nature and size of the equipment" and that he did not remember any stretching more than three feet; another Gore employee testified that the distance between the rollers was "a maximum of 18 inches" (emphasis added); a document prepared by the same employee (an engineer) on June 10, 1969 reports that the stretch span was 8 inches; the 401 machine was the only stretching machine used by the Gore company; and the 401 machine was never substantially changed before October 1969. All this adds up to the fact that the 401 machine was at all relevant times operated with a stretch of less than four feet.⁵ There is no question that the machine was so operated before October 1969 (the District Court found that sales of tape made by the 401 machine were proposed in August 1969).

I can accept Robert Gore's affidavit (to the PTO) that there was no stretching in the Gore shop at a rate exceeding about 10% per second prior to "my invention disclosed in the captioned patent application" (emphasis added)⁶ only because that declaration was expressly qualified by the phrase "to my knowledge" (emphasis added). The District Court specifically found no specific intent by Robert Gore to defraud and, on this record, we cannot properly overturn that finding. But the absence of personal intent to defraud does not mean or say that, whether Robert Gore realized it or not, the 401 machine was not actually operating, well before October 1969, to stretch unsin-

cite this testimony but did cite the opposing evidence) credited the Gores' testimony.

6. The factor of the rate of stretching was of direct interest to the examiner during the prosecution of the '566 patent. In response to the examiner's express request for a declaration that the Gore firm's production of stretched PTFE tape, prior to Robert Gore's invention asserted here, did not involve stretching of unsintered PTFE at a rate exceeding about 10% per second, Robert Gore filed an affidavit in the PTO specifically stating that "to my knowledge" (emphasis added) the 401 machine did not involve stretching at a rate exceeding about 10% per second.

tered PTFE at a rate exceeding about 10% per second. *Cf. O'Brien v. Westinghouse Electric Corp.*, 293 F.2d 1, 10 (3rd Cir.1961). It seems impossible to me to reconcile Robert Gore's insistence on two facts—that (i) he invented the process in October 1969 and (ii) he had no knowledge prior to October 1969 of stretching PTFE at the critical rate—with the solid facts in the record as to the prior operation of the 401 machine, except on the view that Robert Gore did not realize that he and others in the Gore shop had made his invention previously.

2. It follows that in October 1969 the invention of '566 would have been obvious under § 103 to Robert Gore because the prior practice of the 401 machine constituted prior art. Even if this was not prior art technically within § 102, that statutory provision "is not the only source of prior art." *In re Fout*, 675 F.2d 297, 300 (CCPA 1982, emphasis in original). The 401 machine was practiced under the '915 patent (issued to Wilbert Gore) and, whether or not Robert Gore subjectively realized what was happening, he and others in the Gore shop were practicing the invention later embodied in the '566 patent. That was prior art at least as to Robert Gore. *Id.* at 300–01.⁷

3. If it be thought necessary to invoke § 102 directly, in order to show anticipation, the record contains proof that the 401 machine was designed, constructed and used (just as described *supra*) in November and December 1968 and the early months of 1969—more than one year prior to the '566 patent application of May 21, 1970. See Jt.App. E 1199—E 1200. Section 102(b) therefore applies. Although commercial production was apparently not actively sought until June 1969, the practicing of the 401 machine prior to May 21, 1969 was

7. The District Court has found that there are no differences between claim 1 of the '566 patent and the processes previously used by the Gore firm to produce paste-extruded unsintered PTFE.

8. An invention is anticipated if it "was known or used by others in this country * * * before the invention thereof by the applicant for patent" (emphasis added).

"a public use" because the Gore company made "use of the device * * * in the factory in the regular course of business." *Connecticut Valley Enterprises, Inc. v. United States*, 348 F.2d 949, 952, 146 USPQ 404, 406 (Ct.Cl.1965).

4. Also, § 102(a)⁸ applies here because Robert Gore was the inventor in the '566 patent and Wilbert Gore and others in the Gore shop were using the 401 machine before October 1969. Wilbert Gore (the inventor in the '915 patent under which the 401 machine was made and used) and the other employees are "others" within § 102(a)—they are not the same as Robert Gore who claimed to be inventor of the process that ripened into the '566 patent.⁹ See also § 102(f), which would bar Robert Gore if he did not himself invent the subject matter of the '566 patent.¹⁰

5. The majority sustains the validity of claims 3 and 19 of the '566 patent (the claims also involved in appellant's suit for infringement) which are dependent on invalid claim 1. Because of the invalidity of claim 1 the only possible novelty in claim 3 would be the requirement that the rate of stretch would be about 100% per second, and the possible novelty of claim 19 would be that the final length would be greater than about five times the original length. My position is that both of these added elements, if novel, would have been obvious to persons of ordinary skill in the art.

The defect in the majority's analysis is that it neglects the cardinal fact that the prior art included the 401 machine (discussed *supra*), not merely the earlier patents assessed in the majority opinion. The 401 machine directly involved PTFE itself, not conventional thermoplastic polymers.

9. It is undisputed that it was Wilbert Gore who initiated the project for the 401 machine and watched over it.

10. The majority's discussion of "secondary considerations," though it is relevant to other aspects of this case, is irrelevant to the issue of anticipation raised by the 401 machine, and hardly persuasive as to the issues of obviousness based on or with respect to the 401 machine.

Cited as 721 F.2d 1863 (1983)

That machine also directly involved rapid stretching of PTFE at a rate markedly exceeding 10%. With this prior art of the 401 machine before him, an ordinary person skilled in the art would maximize stretch rate, if only to improve the machine's production rate. Cf. *In re Dwyer, Jewell, Johnson, McGrath, & Rubin*, 317 F.2d 203, 207, 137 USPQ 540 (CCPA 1963). Moreover, the very existence and operation of the 401 machine, which stretched PTFE rapidly without breaking, suggests to the skilled person the probability of stretching at even higher rates. Certainly, in the light of the 401 machine, skilled workers would see in at least the prior Markwood, Nash, and Scarlett patents (teaching extensive and rapid stretching of non-PTFE thermoplastics) the suggestion that the method of the 401 machine could also be used for comparable rapid and extensive stretching of PTFE.

6. In sum, I cannot escape the conclusion that—although there was no fraud proved—if the true facts as to the 401 machine had been made known to the PTO (as it requested), the involved claims of the '566 patent should (and probably would) not have been accepted.

F.Supp. 1214, held three patents relating to implantable cardiac pacemakers invalid, and not infringed. On appeal, the Court of Appeals, Markey, Chief Judge, held that: (1) claims 1, 8, 10, 11 and 12 of patent No. 3,891,697, relating to an implantable cardiac pacemaker that does not stimulate the heart above a predetermined rate were invalid as obvious; (2) claims 1, 4, 5, 7, 8, 9, 10 and 23 of patent No. 3,888,005, relating to an implantable digital programmable pacemaker were invalid as obvious; and (3) claim 18 of patent No. 3,901,247, relating to an implantable cardiac pacemaker having an easily interpreted indication of battery condition, was invalid as obvious.

Modified and affirmed.

1. Patents \Leftrightarrow 26(1)

There is neither a statutory distinction between "combination patents" and some other, never defined type of patent, nor a reason to treat the conditions for patentability differently with respect to "combination patents."

2. Patents \Leftrightarrow 324.60

Judgment in patent infringement suit was not so influenced by misstatement of law, that courts "should scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements," so as to require reversal.

3. Patents \Leftrightarrow 112.1

Statutory presumption of a patent's validity is not weakened or destroyed where merely pertinent nonconsidered prior art is introduced; rather, offering party is more likely to carry burden of persuasion imposed by statute when art more pertinent than that considered is introduced. 35 U.S.C.A. § 282.

4. Patents \Leftrightarrow 112.1

A court may not merely "recognize" presumption of a patent's validity and then proceed to "satisfy" itself that the invention possesses such characteristics; rather, statute requires that court begin by presuming that invention has characteristics of

MEDTRONIC, INC., and Med-Rel,
Inc., Appellants,
v.
CARDIAC PACEMAKERS,
INC., Appellee.
Appeal No. 83-820.

United States Court of Appeals,
Federal Circuit.

Nov. 23, 1983.

The United States District Court of
Minnesota, Edward J. Devitt, J., 555



« up

844 F.2d 1576

6 U.S.P.Q.2d 1557

ZMI CORPORATION, Plaintiff-Appellee,

v.

CARDIAC RESUSCITATOR CORPORATION, Defendant-
Appellant.

No. 87-1338.

**United States Court of Appeals,
Federal Circuit.**

April 22, 1988.

Robert E. Hillman, Fish & Richardson, Boston, Mass., argued, for plaintiff-appellee.
With him on the brief, was G. Roger Lee.

Jerry D. Voight, Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C.,
argued, for defendant-appellant. With him on the brief, was C. Larry O'Rourke.

Before ARCHER, Circuit Judge, NICHOLS, Senior Circuit Judge, and MAYER, Circuit
Judge.

ARCHER, Circuit Judge.

1 Cardiac Resuscitator Corporation (CRC) appeals from a judgment of the United
States District Court for the District of Oregon in favor of ZMI Corporation (ZMI)
holding that CRC infringed U.S. Patent No. 4,349,030 ('030) which issued to Alan
Belgard, et al. and was assigned to ZMI. We reverse-in-part, vacate-in-part, and
remand.

Background

2 ZMI sued CRC for infringement of the '030 patent directed to an external,
noninvasive cardiac stimulation device. Six models of cardiac stimulation devices
manufactured by CRC were found to infringe: "Heart Aid" Models 80, 95 and 97
and "Pace Aid" Models 50, 52 and 53. For the purpose of this infringement suit, all
three of the Heart Aid models are considered together as are all three of the Pace
Aid models.

3 When a heart has stopped (asystole) or has slowed to the point of no longer being
life sustaining, or when ventricular fibrillation occurs (i.e., an electrical
malfunctioning of the heart evidenced by irregular beating that prevents blood from
flowing through the heart), an electrical stimulus applied to the heart may
defibrillate the heart and/or pace the heart at a selected rate.

4 In the 1950's, external, noninvasive pacing was first introduced to artificially

stimulate hearts with pulses of electricity applied externally. This method failed to gain widespread acceptance because the external application of pulses of electricity caused too much pain to the patient. In passing the electrical pulses through the skin and the skeletal muscles of the body to reach the heart, the patient experienced violent and painful chest pounding and painful stinging of the skin. To avoid these problems, invasive pacing techniques were developed whereby electrical pulses were delivered to the heart by electrodes placed inside the body. However, these methods proved too slow and invasive to be satisfactory.

5 The '030 patent is directed toward a system for applying external noninvasive cardiac stimulation whereby electrical pulses are applied to a patient externally but are within a pain threshold so as to be useful on a conscious patient. The patent states that this is accomplished "through the use of electrodes with large surface, nonmetallic, skin-contacting members providing low current density, and also through the use of a pulse generator for the electrodes that provides constant current without spikes." The '030 patent has two independent claims: apparatus claim 1 and method claim 14.¹ The district court found that each of these claims includes the following three components:

- 6 1. a pulse duration longer than five milliseconds;
7 2. constant current pulses without high current spikes; and
8 3. electrodes that have nonmetallic skin-contacting members.

9 It is not disputed on appeal that the accused devices include the first two components (pulse duration longer than five milliseconds and constant current pulses without spikes). The dispute here goes to whether the accused devices meet the claim limitation:

10 a pair of electrodes having nonmetallic skin-contacting members that provide low current density to reduce stimulation of local sensory nerves and resulting pain.

11 CRC argues that it is the electrodes themselves that must function to provide the low current density, while ZMI argues that the three element combination provides the low current density.²

12 The district court found that "[t]he electrode covered by the patent must be nonmetallic and provide low current density in order to reduce the stimulation of local sensory nerves which results in pain" but also found that "a person skilled in the art would understand that the requirement that the electrodes deliver low current density is a result of the three element combination and not simply a result of the electrodes themselves." The court went on to say that:

13 The relevant inquiry before this court as to the electrode element of this patent is whether CRC's devices use nonmetallic electrodes in combination with the other two elements of the invention, constant current and long pulses, in order to provide lower current and resulting low current density. There is no dispute that CRC's devices do that.

14 The primary difference for the purpose of this infringement suit between CRC's Pace Aid and Heart Aid models is in the amount of current supplied. The Heart Aid model, used in emergency situations when ventricular fibrillation occurs, transmits too high a current to make it tolerable to most conscious patients. The Pace Aid model, on the other hand, uses a much lower current and is useful on conscious

patients.

15 CRC argues on appeal that the district court erred in its interpretation of the claims and that when properly interpreted the claims are not infringed by the Heart Aid and Pace Aid devices either literally or under the doctrine of equivalents.

OPINION

16 Analysis of patent infringement involves two inquiries: first the claims must be properly construed to determine their scope and then it must be determined whether the properly interpreted claims encompass the accused structure. *Mannesmann Demag Corp. v. Engineered Metal Products Co.*, 793 F.2d 1279, 1282, 230 USPQ 45, 46 (Fed.Cir.1986). Literal infringement requires that every limitation of the patent claim must be found in the accused device. *Id.* Improper claim construction, i.e., an improper determination of the scope of the claims, can distort the entire infringement analysis. *Moeller v. Ionetics, Inc.*, 794 F.2d 653, 656, 229 USPQ 992, 994 (Fed.Cir.1986).

A. Claim Construction

17 "Claim construction is reviewed as a matter of law.... However, interpretation of a claim may depend on evidentiary material about which there is a factual dispute, requiring resolution of factual issues as a basis for interpretation of the claim.... The question of literal infringement (do the claims read on the accused device) is determined as a factual inquiry and is reviewed on a clearly erroneous standard." *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1054, 1988 WL 990, 5 USPQ2d 1434, 1441 (Fed.Cir.1988).

The district court found:

18 All claims of the Belgard patent contain the following three essential elements required by independent claims 1 and 14:

19 1. two electrodes having nonmetallic skin-contacting members that provide low current density to reduce stimulation of local sensory nerves and resulting pain;

20 2. constant current pulses without high-current spikes that cause skeletal muscle contraction;

21 3. a pulse duration of greater than 5 milliseconds to reduce the threshold current required for cardiac stimulation to permit the use of lower current pulses to provide effective stimulation at the same time that skeletal muscle contraction is reduced by the lower current.

22 After holding that the constant current and the pulse duration limitations of the claims are found in the accused device, the district court explained with respect to the claim limitation relating to the electrodes:

23 The current density provided by the electrodes is primarily a function of the current coupled to them by the electric signal source....

24 The court finds that a person skilled in the art would understand that the requirement that the electrodes deliver low current density is a result of the three element combination and not simply a result of the electrodes themselves....

25 The relevant inquiry before this court as to the electrode element of this patent is

whether CRC's devices use nonmetallic electrodes in combination with the other two elements of the invention, constant current and long pulses, in order to provide lower current and resulting low current density. There is no dispute that CRC's devices do that.

26 CRC argues that the district court erred, as a matter of law, when it "construed the requirement for low current density as applying to 'the entire [claimed] system.' " CRC argues that the district court failed "to accept the plain words of the claims in view of the patent specification and ... prosecution history." In essence CRC contends that the plain meaning of the claim as drafted requires something in the structure of the electrode that causes a low current density, as for example, electrodes having a high impedance or a large surface area. CRC argues that since its electrodes are low impedance electrodes they do not provide the low current density and therefore its Pace Aid and Heart Aid devices do not infringe.

27 ZMI responds by arguing that according to its expert "the only reason current density appears in that location [in the claim] is that's where [the current] is actually delivered to the skin.' In other words, the low current density provided by the whole system--by all the elements of the claim--is delivered to the patient by the electrodes, thus accounting for its grammatical location in the claim." ZMI further states that no electrode can itself provide low current density. Rather, the current density provided by electrodes is primarily a function of the current coupled to them by an electric signal source.

28 In interpreting claims resort should be made to the claims at issue, the specification, and the prosecution history. Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 867, 228 USPQ 90, 93 (Fed.Cir.1985). All three are illuminating in this instance.

1. The claims

29 "The threshold requirement in claim construction is an examination of the claim at issue." McGill Inc. v. John Zink Co., 736 F.2d 666, 672, 221 USPQ 944, 948 (Fed.Cir.), cert. denied, 469 U.S. 1037, 105 S.Ct. 514, 83 L.Ed.2d 404 (1984). The terms of a claim will be given their ordinary meaning, unless it appears that the inventor used them differently. Envirotech Corp. v. Al George, Inc., 730 F.2d 753, 759, 221 USPQ 473, 477 (Fed.Cir.1984).

30 ZMI stipulated at trial, and concedes on appeal, that from a grammatical point of view, the low current density recitation in the claims modifies the word "electrodes." Thus, the phrase in dispute seems to require an electrode structure that results in the described limitation of low current density.³ The ordinary meaning of claim language, however, is not dispositive and resort must still be had to the specification and prosecution history to determine if the inventor used the disputed terms differently than their ordinary accustomed meaning. See McGill Inc., 736 F.2d at 672-74, 221 USPQ at 948-50.

2. The specification

31 Patent law allows an inventor to be his own lexicographer. "[T]he specification aids in ascertaining the scope and meaning of the language employed in the claims inasmuch as words must be used in the same way in both the claims and the specification." Autogiro Co. of America, 384 F.2d at 397, 155 USPQ at 702-03. The district court largely ignored the specification in interpreting the claims, making only passing reference in its opinion to the specification and then only to point to a

change made prior to filing the patent application.

The '030 specification provides:

- 32 It has been discovered that the severe pain from stimulation of local sensory nerves during external electric cardiac stimulation can be largely eliminated by the use of electrodes with large-surface, non-metallic, skin-contacting members providing low current density.
- 33 This portion of the specification indicates that it is the electrodes, because of large surface, high impedance or otherwise, which provide the low density current. Therefore, this part of the specification supports an interpretation that gives the language of the claims its plain meaning.
- 34 The specification also discloses that, in operation, the electrodes "are first dampened with tap water, alternatively, a weak electrolyte, such as sodium bicarbonate, or a gel may be used." ZMI argues that some of these materials have resistivities as low as 50 ohm-cm² and that "the patent was not geared to just high impedance, but included even low impedance materials." We note there was testimony that some gels have resistivities this low but the specification does not suggest that a gel with a low resistivity should be used nor is a specific example of that type of gel provided. Further, it is not in dispute that tap water is a high impedance material. The specification, therefore, again supports an interpretation that the plain meaning was intended by the portion of the claims at issue.

3. The prosecution history

- 35 Resort to extrinsic evidence, such as the prosecution history, is necessary to interpret disputed claims. Moeller, 794 F.2d at 656, 229 USPQ at 994; SSIH Equipment S.A. v. USITC, 718 F.2d 365, 376, 218 USPQ 678, 688 (Fed.Cir.1983) (the prosecution history is always relevant to proper claim interpretation). "[T]he prosecution history (or file wrapper) limits the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance." Standard Oil Co. v. American Cyanamid Co., 774 F.2d 448, 452, 227 USPQ 293, 296 (Fed.Cir.1985); see also McGill Inc., 736 F.2d at 673, 221 USPQ at 949. Although the district court acknowledged that the claims must be interpreted in light of the prosecution history, the court did not refer to the prosecution history in its opinion. The interpretation of the claims which the district court found, and which ZMI urges is correct, was disclaimed by applicants during prosecution of the '030 patent.

- 36 After the application which eventually issued as the '030 patent was filed, the patent office issued a first rejection. Originally filed claim 1 read in pertinent part:

- 37 a pair of electrodes having nonmetallic skin-contacting members that provide low current density.

- 38 Claim 1 was amended after this rejection to read in pertinent part:

- 39 a pair of electrodes having nonmetallic skin-contacting members that provide low current density to reduce stimulation of local sensory nerves and resulting pain.

- 40 (The underlined words were added by the amendment.) Accompanying this claim amendment were remarks which summarized this portion of the invention as follows:

the pain resulting from stimulating local sensory nerves is avoided by the nonmetallic members, which provide low current density during the communication of the electrical stimuli to the patient's skin.

42 The amendment and accompanying remarks make it clear that the reduction of pain through the transmission of a low current density to the skin is intended to be a functional limitation on the nonmetallic members, or the electrodes.

43 There is still further evidence in the prosecution history as to the proper claim interpretation. The two independent claims were rejected during prosecution as obvious in view of three prior art references. The examiner stated that the "use of nonmetallic skin contacting members" was obvious in view of the Moore reference, U.S. Patent No. 3,762,420. Applicant in response said:

44 Moore ... teaches away from applicants' electrodes that provide low-current density by disclosing a defibrillation electrode employing a gauze pad soaked in saline "solution having high conductive properties" (col. 2, line 14) to meet the "requirement of good electrode-patient contact" (col. 1, lines 36-7) imposed by "[t]he large currents which must flow through the electrodes and into the patient, in order to achieve defibrillation" (col. 1, lines 34-6).

45 Moore discloses only an electrode and not a whole system for cardiac stimulation and therefore the distinction applicants made applied to the electrodes alone. Again, low current density provided by the electrodes was the focus, not low current density resulting from other system components.

4. Conclusion

46 We conclude that the district court erred as a matter of law in its interpretation of claims 1 and 14. *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1569, 219 USPQ 1137, 1140 (Fed.Cir.1983). The claims, as properly interpreted, are limited to an electrode which functions to lower the current density (as, for example, by having a high resistivity or large surface area) applied to the patient's skin "to reduce stimulation of local sensory nerves and resulting pain."

B. Infringement

1. Heart Aid

In its brief to this court ZMI states:

47 ZMI concedes that the Heart Aid models do not literally infringe the claims because they use too high a current (150 ma) to make them tolerable to most conscious patients; thus they lack the required low current and low current density.

48 In view of this admission, the district court's finding of literal infringement must be reversed. ZMI contends, however, that the case must be remanded for findings under the doctrine of equivalents. We disagree.

49 When literal infringement is not found, the equitable doctrine of equivalents comes into play. Under the three-pronged analysis from *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 608-09, 70 S.Ct. 854, 94 L.Ed. 1097, 85 USPQ 328, 330 (1950), infringement under the doctrine of equivalents depends on whether the accused device performs substantially the same function in substantially the same way to achieve the same result.

50

To be infringing under the doctrine of equivalents the Heart Aid devices would have to provide "low current density to reduce stimulation of local sensory nerves and resulting pain." The concession by ZMI means that the accused devices do not perform substantially the same function (work) in substantially the same way. The Heart Aid devices admittedly do not provide low current density, and because the current transmitted makes them intolerable to most conscious patients they do not reduce stimulation to the local sensory nerves and reduce pain. Thus, they do not perform substantially the same function in substantially the same way and do not infringe under the doctrine of equivalents. Accordingly, there is no need to remand to the district court for a finding as to infringement of the Heart Aid devices under the doctrine of equivalents.

2. Pace Aid

51 The Pace Aid devices, on the other hand, do provide low current density, but because the district court's finding of literal infringement was predicated on an improper construction of the claims of the '030 patent that portion of the district court's judgment must be vacated and remanded. On remand the court must determine whether the claims as interpreted above read on the Pace Aid devices, and in particular the electrode element employed by such devices, or whether the Pace Aid devices infringe under the doctrine of equivalents. See *Graver Tank*, 339 U.S. at 608-09, 70 S.Ct. at 856, 85 USPQ at 330. Infringement requires that every limitation of the patent claim must be found in the accused device either literally or equivalently. See *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 935, 4 USPQ2d 1737, 1739-40 (Fed.Cir.1987); *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528, 1532-33, 3 USPQ2d 1321, 1324-25 (Fed.Cir.1987). The party alleging infringement has the burden of proving infringement by a preponderance of the evidence. *Uniroyal, Inc.*, 837 F.2d at 1054, 5 USPQ2d at 1441.

Conclusion

52 The district court's finding of infringement of claims 1 and 14 by the Heart Aid devices is reversed. The court's finding of infringement by the Pace Aid devices is vacated and the case is remanded for consideration of infringement under properly interpreted claims.

Costs

53 Each party shall bear its own costs.

54 REVERSED-IN-PART, VACATED-IN-PART AND REMANDED.

APPENDIX

- 55 1. An external noninvasive electric cardiac stimulation system comprising
- 56 a pair of electrodes having nonmetallic skin-contacting members that provide low current density to reduce stimulation of local sensory nerves and resulting pain,
- 57 a pulse generator electrically connected to said electrodes,
- 58 said generator including means to provide constant current pulses without high current spikes that cause skeletal muscle contraction,
- 59 said pulses being greater than 5 milliseconds in duration to reduce the threshold current required for cardiac stimulation, to permit the use of lower current pulses

to provide effective stimulation at the same time that skeletal muscle contraction is reduced by the lower current, and

60 means to activate said pulse generator to provide said current pulses.

61

62 14. A method for providing external noninvasive electric cardiac stimulation comprising

63 attaching two electrodes to a patient's chest,

64 said electrodes having nonmetallic skin-contacting members providing low current density to reduce stimulation of local sensory nerves, and

65 sending electric pulses between said electrodes,

66 said pulses having constant current without high current spikes that cause skeletal muscle contraction and being of greater than 5 milliseconds duration to reduce the threshold current required for cardiac stimulation, to permit the use of lower current pulses to provide effective stimulation at the same that skeletal muscle contraction is reduced at the lower current.

67 NICHOLS, Senior Circuit Judge, dissenting.

68 I find this decision troubling, much as I respect the skilled use of established methods of claim construction. We are up against what we must realistically consider a growing inability of speakers and writers, lawyers, technicians, and laymen, to say what they intend to say with accuracy and clarity.

69 Taken literally, the claim language is absurd. The electrodes cannot and do not provide low current density to reduce * * * pain. The generators do. House current would not do the job. Resort to the specifications and the prosecution history does not help because the same absurdity is repeated there. As 1988 claim interpreters, therefore, we must resort, as interpreters of statutes and contracts of recent origin must, to our gut feeling of what the inventor really meant to say.

70 By the dictionary, the word "provide" is often associated with the word "for." If you "provide for" a hurricane, that does not mean you cause or make a hurricane. Your arrangements must be compatible with a hurricane occurring. Here you must have constant current, without spikes, with pulses greater than 5 milliseconds. The electrodes must then be compatible, but I take it this court means the electrodes must be more than compatible to infringe, i.e., must do more than "provide for."

71 I think the trial court, in the language quoted, meant that the low current density of the claims could result from special design means other than the electrodes. That it could be produced with no regard to the electrodes would make meaningless the requirement that the skin-contacting members be nonmetallic. They must be adapted to their function. That the electrodes could produce the desired effect without regard to what reaches them from the generator, i.e., from house current, is equally absurd. Under the court's remand, the trial court will have to ascertain, by gut feeling, its own or that of witnesses, some notion of a middle ground, or what one skilled in the art would have thought. It is impossible to draw any bright line, impossible for us as it will be for the trial court.

72 I agree on reversal as to the Heart Aid, but as to the Pace Aid, I think the trial

court grappled with the uncertainties involved as well as this court, and as well as will be possible after the remand. In such circumstances, I would have affirmed as to the Pace Aid.

1

Claims 1 and 14 are appended. Only claim 1 is discussed herein but the analysis applies equally to claim 14. The remaining claims in the '030 patent are all dependent from these claims. Therefore, if claims 1 and 14 are not infringed, none of the claims are infringed

2

Current density means the amount of current applied per unit area. The current density is a function of several factors including the amount of current applied, the impedance, resistivity or conductivity of the electrode, and the surface area of the electrode

3

As the dissent points out, electrodes cannot, without some source of power such as a "generator," "provide" a current density. Our concern here, however, is with a limiting phrase, "provide low current density to reduce ... pain," which the patentee, as his own lexicographer, has used, see Autogiro Co. of America v. United States, 181 Ct.Cl. 55, 384 F.2d 391, 397, 155 USPQ 697, 702 (1967), and which, it is conceded, grammatically modifies the term "electrodes." We must determine in accordance with established claim construction principles whether it has meaning as a limitation of the electrodes or whether it must be construed as a limitation of the three element system

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127 F.3d 1048

44 U.S.P.Q.2d 1023

In re Charles P. MORRIS, Kenneth L. Pottebaum, and John D. Stricklin.

No. 96-1425.

**United States Court of Appeals,
Federal Circuit.**

Decided Sept. 10, 1997.

*Rehearing Granted with no change in result and in banc
suggestion declined Sept. 22, 1997.*

Richard H. Stern, Abblondi, Foster, Sabin & Davidow, Washington, DC, for appellants. Of counsel are Bill D. McCarthy, Randall K. McCarthy, Phillip L. Free, Jr., McCarthy & Associates, Inc., Oklahoma City, OK, and Edward P. Heller, III, Seagate Technology, Inc., Scotts Valley, CA.

Nancy J. Linck, Solicitor, Patent and Trademark Office, U.S. Department of Commerce, Arlington, VA, for appellee. Of counsel are Albin F. Drost, Deputy Solicitor, Kenneth R. Corsello and David J. Ball, Jr., Associate Solicitors.

ORDER

Appellants Morris et al. petition for rehearing of the decision of this court issued under date of August 18, 1997. Appellants point to several statements in the issued opinion which, in their view, entitle them to rehearing of their appeal. After thorough review of the petition, the court grants the petition for rehearing for the limited purpose of laying to rest any doubts about the court's views as expressed in the opinion; the judgment affirming the decision of the Board is reaffirmed.

SO ORDERED.

Before PLAGER, CLEVENGER, and BRYSON, Circuit Judges.

REVISED OPINION

PLAGER, Circuit Judge.

1

Appellants Morris, Pottebaum, and Stricklin appeal from a decision of the Board of Patent Appeals and Interferences in Application Ser. No. 07/673,967, dated March 28, 1996. In that decision the Board affirmed a rejection of appellants' claims 1, 5 and 20 under 35 U.S.C. § 102(b). Because the Board did not err in its reading of appellants' claims, we affirm.

BACKGROUND

2

On March 22, 1991, appellants filed a patent application entitled "Acoustic Isolator for a Disc Drive Assembly." The application was assigned Ser. No. 07/673,967 by the United States Patent and Trademark Office ("PTO") and prosecution of the application proceeded.

3 The problem addressed in the application was the acoustic noise generated by a disc drive as a result of the physical movement of the internal motors. According to the application, modern disc drives such as used in personal computers include two motors, also referred to as "excitation sources." The first is a spindle motor that spins the magnetic discs upon which data is stored. The second is an actuator motor that moves a read/write head across the discs to access specific locations or "tracks" on the discs. These motors are mounted in a disc housing. The housing is typically comprised of an upper and a lower housing cover that mate together to enclose the entire disc drive. The problem described in the application is that any vibration of the motors is transmitted to the housing by virtue of the connection of the motors to the housing. This causes the housing to vibrate in sympathy with the motors, particularly if the resonant frequency of the motor corresponds to the natural frequency of either of the housing covers.

4 Prior art solutions addressed this problem by adding an isolator between the motors and the housing. For example, United States Patent No. 4,491,888 (the "Brown" patent) taught the use of an annular elastomeric pad to absorb the vibrations. As described and shown in Brown, the "elastomeric member or pad 100 is engaged between the base plate and lower casing ... to assist in dampening actuator-induced vibrations." Brown, Col. 7, lines 32-47. Figure 2 of Brown, showing a cross-section of the pad 100 and surrounding housing 12, is reproduced below.

5 NOTE: OPINION CONTAINS TABLE OR OTHER DATA THAT IS NOT
VIEWABLE

6 The disadvantage of Brown, according to appellants, was that it required an additional part. This may not seem significant to those unfamiliar with the disc drive industry, but, in the cost-sensitive and constantly miniaturizing world of disc drive manufacturers, additional pieces of equipment add to the cost of the disc drive and consume valuable real estate in the drive.

7 Appellants' approach was different from the approach taken in Brown. Instead of adding an additional part, appellants thinned down a portion of the motor casing in the area where the motor attached to the casing. This thinned-down area, referred to as a "compliance area," absorbs most of the kinetic energy produced by the motor because of its reduced thickness, without radiating that energy outward to the remainder of the housing. Appellants maintained in their application that acoustic noise can be significantly reduced using this approach, and without additional parts.

8 Figure 3 of the appellants' application, reproduced below, shows a partially detailed cross-sectional view of a disc drive according to their invention. The disc drive includes a top housing cover 12A and a bottom housing cover 14A. A motor 16 is attached to the top and bottom covers by screws 32A. A portion of the top and bottom covers 50A is thinned-down in an area extending radially away from the screws 32A. This "compliance area," due to its reduced thickness relative to the remaining housing, achieves the acoustic noise reduction of the applicants claimed invention.

NOTE: OPINION CONTAINS TABLE OR OTHER DATA THAT IS NOT
VIEWABLE

The application included 22 claims. Original claim 1 read:

1. An improved acoustic isolation apparatus for reducing the acoustic noise produced by a system having at least one excitation source disposed so as to impart vibrations to a structure member coupled thereto, the acoustic isolation apparatus comprising:

at least one acoustic isolator providing determined compliance of the structure member in a selected area of compliance disposed to impede coupling of the vibrations of the excitation source and the structure member.

In a first office action, claim 1 was rejected as being anticipated under 35 U.S.C. § 102(b) in view of appellants' admitted prior art and also in view of Brown.¹ The admitted prior art was essentially identical to applicant's Figure 3, shown above, but the "compliance area" amounted to a counter-sink hole simply big enough to receive the head of the screw 32A.

In response to this rejection, appellants amended claim 1 as follows, with language removed enclosed in square brackets and language added underlined:

1. (Amended) An improved acoustic isolation apparatus for reducing the acoustic noise produced by a system having at least one excitation source disposed so as to impart vibrations to a [structure] support member coupled thereto, the acoustic isolation apparatus comprising:

at least one acoustic [isolator providing determined compliance of the structure member in] compliance area integrally formed on a selected area of [compliance disposed] the support member so as to impede coupling of the vibrations of the excitation source [and] to the [structure] support member.

In addition, appellants argued that Brown is distinguishable because it "does not teach or suggest an acoustic isolator apparatus which is integrally formed as part of the housing." The appellants then went on to describe Brown in general terms and concluded that "it is clear that the base plate and housing arrangement disclosed in Brown '888 is completely different in structure than the acoustic isolator apparatus recited in Applicants' claims 1-22, as amended."

In response to appellants' amendment and related arguments, the examiner entered a new ground of rejection. Claim 1 was rejected under the same section of the statute, Section 102(b), but using a different reference, Biermeier et al., U.S. Patent No. 4,780,777. Biermeier showed a thin, substantially horse-shoe shaped resilient section adjacent the spindle of the drive shaft in a disc drive housing to provide a support for the spindle of a disc and to achieve bearing preload. Biermeier, Col. 4, lines 53-68. According to the examiner, Biermeier showed "a resilient wall region 15 integrally formed on the housing 1 which would impede coupling of vibrations of the excitation source 38 to the support member 1 while maintaining rigidity of the housing assembly." The examiner further stressed that Biermeier does show "an acoustic isolator apparatus which is integrally formed as part of the housing."

The appellants responded by once again amending their claim and by attempting to distinguish the cited reference. Claim 1 after this second amendment read:

1. (Twice Amended) An improved acoustic isolation apparatus for reducing the acoustic noise produced by a system having at least one excitation source [disposed so as to impart vibrations] attached at a contact point to a support member, the acoustic isolation apparatus comprising:

at least one acoustic compliance area integrally formed on a selected area of the support member so as to impede selected frequencies of acoustic noise resulting from the coupling of the vibrations of the excitation source to the support member, the acoustic

compliance area formed on the support member such that increased compliance is provided to the support member substantially surrounding the contact point.

Appellants vigorously contested the examiner's assertion that the Biermeier resilient section achieved any acoustic reduction. If Biermeier achieved any acoustic reduction, according to appellants, "it was pure happenstance."

After considering the amendment and related arguments, the examiner shifted back to his original ground for rejection--Brown. In a third office action, the examiner again rejected claim 1 as being anticipated by Brown under Section 102(b). According to the examiner, "Brown et al show an acoustic compliance area 100 integrally formed on a selected area of the support member 12 so as to impede selected frequencies of acoustic noise resulting from the coupling of the vibrations of the excitation source 92 to the support member 12." The examiner considered the appellants' arguments with respect to Biermeier moot in view of the new ground of rejection.

A third amendment to claim 1 followed. The amended claim 1 now read:

1. (Thrice Amended) An improved acoustic isolation apparatus for reducing the acoustic noise produced by a system having at least one excitation source attached at a contact point to a support member, the acoustic isolation apparatus comprising:

at least one acoustic compliance area integrally formed [on] as a portion of a selected area of the support member so as to impede selected frequencies of acoustic noise resulting from the coupling of the vibrations of the excitation source to the support member, the acoustic compliance area formed [on] as a portion of the support member such that [increased compliance is provided to] the support member has increased compliance substantially surrounding and extending radially about the contact point.

Appellants tried to distinguish Brown on the ground that the patent "does not teach or suggest an acoustic isolator apparatus which is 'integrally formed as a portion of the housing.'" Moreover, according to appellants, Brown failed to accomplish the main objectives of the invention, that of reducing space and parts requirements. Because the acoustic compliance area of the claimed invention is "integrally formed as a portion of the support member," appellants argued their claimed invention achieves the goal of reducing acoustic noise without the concomitant disadvantages of Brown.

The examiner was unpersuaded. Accordingly, he made the rejection final.² See 37 C.F.R. § 1.113. In the final rejection the examiner reiterated his position that "the language 'integrally formed as a portion of' (e.g. a selected area, the housing assembly or the support member) still reads on the acoustic compliance area 100 of Brown et al."

Dissatisfied with the examiner's rejection, appellants appealed to the Board of Patent Appeals and Interferences. The Board framed the issue presented on appeal as "the propriety of the examiner's considering the elastomeric pad 100 formed of foam rubber and best shown in figures 2 and 3 of Brown as comprising the claimed acoustic compliance area of a support member or of a housing." Appellants argued before the Board that the elastomeric pad 100 of Brown is neither "integrally formed" nor "a portion of" the housing assembly to which it is attached, as those terms are used in appellants' patent application. Appellants urged that the proper interpretation of the disputed language in their proposed claim, in light of the specification, required the examiner to limit the scope of the claim to a thinned-down portion of a housing. The Board disagreed and therefore affirmed the examiner's rejection.

The Board cited numerous CCPA decisions including *In re Kohno*, 55 C.C.P.A. 998, 391 F.2d 959, 157 USPQ 275 (CCPA 1968), *In re Dike*, 55 C.C.P.A. 1172, 394 F.2d 584, 157 USPQ 581 (CCPA 1968), *In re Larson*, 52 C.C.P.A. 930, 340 F.2d 965, 144 USPQ 347 (CCPA 1965), and *In re Clark*, 41 C.C.P.A. 974, 214 F.2d 148, 102 USPQ 241 (CCPA 1954), in which the term "integral" had been given a broader meaning than that advanced by the appellants. According to the Board, "the term 'integral' is a relatively broad term inclusive of means for maintaining parts in a fixed relationship as a single unit." The appellants' interpretation, according to the Board, impermissibly required them to read limitations of the specification into the appealed claims. Under the proper interpretation

of the disputed language, the Board concluded that the examiner correctly rejected claim 1 as being anticipated by Brown. This appeal followed.

DISCUSSION

As a preliminary matter the parties disagree about the proper claim construction methodology to be employed by the PTO. Appellants argue that this court's *in banc* decisions in *Markman v. Westview Instruments*, 52 F.3d 967, 34 USPQ2d 1321 (Fed.Cir.1995) (*in banc*), aff'd, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577, 38 USPQ2d 1461 (1996), and in *In re Donaldson*, 16 F.3d 1189, 29 USPQ2d 1845 (Fed.Cir.1994) (*in banc*), require the PTO in the course of prosecution to interpret claims in the same manner as courts are required to during infringement proceedings. The Solicitor responds by arguing that our past decisions permit the PTO to give claim language its "broadest reasonable interpretation" during prosecution, citing *In re Zletz*, 893 F.2d 319, 13 USPQ2d 1320 (Fed.Cir.1989), *In re Yamamoto*, 740 F.2d 1569, 222 USPQ 934 (Fed.Cir.1984), and *Burlington Indus. v. Quigg*, 822 F.2d 1581, 3 USPQ2d 1436 (Fed.Cir.1987).

The Solicitor is correct, and we reject appellants' invitation to construe either of the cases cited by appellants so as to overrule, *sub silentio*, decades old case law. Some cases state the standard as "the broadest reasonable interpretation," see, e.g., *In re Van Geuns*, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed.Cir.1993), others include the qualifier "consistent with the specification" or similar language, see, e.g., *In re Bond*, 910 F.2d 831, 833, 15 USPQ2d 1566, 1567 (Fed.Cir.1990). Since it would be unreasonable for the PTO to ignore any interpretive guidance afforded by the applicant's written description, either phrasing connotes the same notion: as an initial matter, the PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification.

Had either of the cases cited by appellants intended to make the dramatic shift in our jurisprudence suggested by appellants one can safely assume they would have done so explicitly. We need not, however, rely solely on assumption or inference. Both cases are readily distinguishable from the present case. The first, *Markman*, involved an infringement suit in the district court. This is a distinction with a difference. Patents in infringement suits are presumed valid by statute. 35 U.S.C. § 282 (1994). No such presumption attaches before the PTO.³ It is the PTO's duty to assure that the statutory requirements for patentability are met. See 35 U.S.C. § 131 (1994). These requirements include 35 U.S.C. §§ 101 (utility), 102 (novelty), § 103 (nonobviousness), § 112 p 1 (enablement, written description, and best mode) and § 112 p 2 (particularly point out and distinctly claim).

It would be inconsistent with the role assigned to the PTO in issuing a patent to require it to interpret claims in the same manner as judges who, post-issuance, operate under the assumption the patent is valid. The process of patent prosecution is an interactive one. Once the PTO has made an initial determination that specified claims are not patentable (the *prima facie* case concept, see *In re Oetiker*, 977 F.2d 1443, 1448, 24 USPQ2d 1443, 1447 (Fed.Cir.1992) (Plager, J. concurring)), the burden of production falls upon the applicant to establish entitlement to a patent. See *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed.Cir.1990); *In re King*, 801 F.2d 1324, 1327, 231 USPQ 136, 138 (Fed.Cir.1986) (burden shifts to appellant after the PTO establishes a *prima facie* case of anticipation). This promotes the development of the written record before the PTO that provides the requisite written notice to the public as to what the applicant claims as the invention. As the Supreme Court recently affirmed, public notice is an important objective of patent prosecution before the PTO. See *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, --- U.S. ----, ----, 117 S.Ct. 1040, 1051, 137 L.Ed.2d 146 (1997) (establishing a rebuttable presumption of prosecution history estoppel when the public record is unclear as to whether the prior art precipitated an amendment to the claims in order to give "proper deference to the role of claims in defining an invention and providing public notice.").

Although *In re Donaldson* comes closer to the present case, it still fails to prove appellants' point. In *Donaldson*, this court considered the question of how the PTO was required to interpret claims drafted pursuant to 35 U.S.C. § 112 p 6, claims in so-called "means-plus-function" language. See 35 U.S.C. § 112 p 6 (1994) ("An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of the structure, material, or acts in support thereof."). The PTO argued that they were permitted to interpret the claims as broadly as the claim language permitted without the constraint of the written description contained in the specification. The *Donaldson* court, in banc, noted that the statute requires that claims so written "shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." *Donaldson*, 16 F.3d at 1193, 29 USPQ2d at 1848-49. The court found no basis in the statute or legislative history for exempting the PTO from this statutory mandate. Therefore the PTO is required to consult the specification during examination in order to determine the permissible scope of the claim.

It is enough to point out that this case does not involve claims written in means-plus-function language to distinguish *Donaldson* from the present case. There is no comparable mandate in the patent statute that relates the claim scope of non-s 112 p 6 claims to particular matter found in the specification. See *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1552, 42 USPQ2d 1737, 1740 (Fed.Cir.1997) ("The claim language itself defines the scope of the claim.").

We need not simply rely on this distinction, however, for the *Donaldson* court went on to dispose of the precise argument that appellants now make. The PTO had argued that our prior case law, as discussed above, permitted examiners to give claims their "broadest reasonable interpretation" during prosecution. See, e.g., *In re Prater*, 56 C.C.P.A. 1381, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969). Limiting claims written in accordance with § 112 p 6 to what is described in the specification and equivalents thereof, according to the PTO, would conflict with this practice. *Donaldson* itself pointed out that the court's holding is readily harmonized with that principle. Requiring the PTO to interpret claims in light of the specification "merely sets a limit on how broadly the PTO may construe means-plus-function language under the rubric of 'reasonable interpretation.'" *Donaldson*, 16 F.3d at 1194, 29 USPQ2d at 1850. Therefore, it cannot reasonably be argued that *Donaldson* overruled our long line of case law that permits the PTO to give claims their "broadest reasonable interpretation."

The question then is whether the PTO's interpretation of the disputed claim language is "reasonable." Appellants contend that the Board's interpretation is unreasonable when the claim language is properly construed in light of the specification and other extrinsic evidence. In particular, appellants argue that the phrase "integrally formed as a portion of" requires the compliance area to be "fused together" with the housing "to form a single part--such as by casting them as a molded article, machining a single piece of material to form them, welding them together, or otherwise joining them in a firm and substantially permanent manner." Brief for Appellants at 18. Because the elastomeric pad of Brown is "removably coupl[ed]," according to appellants, Brown does not anticipate claim 1 when properly construed. *Id.*

The examiner stated in his third rejection that he interpreted the phrase "integrally formed as a portion of a selected area of the support member" to read on Brown. By this the examiner clearly meant that he interpreted the phrase "integrally formed" to encompass devices that had a compliance area fixedly attached to a support member, as in Brown. The examiner reiterated this interpretation in the final rejection. "It is the Examiner's position that the language 'integrally formed as a portion of' (e.g. a selected area, the housing assembly or the support member) still reads on the acoustic compliance area 100 of Brown et al." The Board also adopted this interpretation citing numerous cases in which the word "integral" had been interpreted broadly to encompass multi-piece structures.

We conclude that the PTO's interpretation is reasonable in light of all the evidence before the Board. As the cases cited above demonstrate, our predecessor court had on

several prior occasions interpreted the term "integral" to cover more than a unitary construction. See, e.g., *In re Kohno*, 55 C.C.P.A. 998, 391 F.2d 959, 157 USPQ 275 (CCPA 1968), *In re Dike*, 55 C.C.P.A. 1172, 394 F.2d 584, 157 USPQ 581 (CCPA 1968), *In re Larson*, 52 C.C.P.A. 930, 340 F.2d 965, 144 USPQ 347 (CCPA 1965), and *In re Clark*, 41 C.C.P.A. 974, 214 F.2d 148, 102 USPQ 241 (CCPA 1954). This court has also endorsed that interpretation. See, e.g., *Advanced Cardiovascular Sys. v. Scimed Life Sys.*, 887 F.2d 1070, 1074, 12 USPQ2d 1539, 1542 (Fed.Cir.1989) (nothing of record limited "integral" to mean "of one-piece" construction). Appellants' attempt to distinguish these cases misses the point. Absent an express definition in their specification, the fact that appellants can point to definitions or usages that conform to their interpretation does not make the PTO's definition unreasonable when the PTO can point to other sources that support its interpretation.

Appellants argue that their claim does not just require that the acoustic compliance area be integrally formed from the support member. Instead, claim 1 requires that the area be "integrally formed as a portion of" the support member. This does not change our conclusion. *Portion* is defined as a "part or share of something." Webster's Third New International Dictionary 1768 (1986). Thus this term tells us nothing about whether the acoustic compliance area is removable or separable from the support member. A slice of pie can be considered a 'portion of' the pie while also being removable. We conclude that the added limitation does not overcome the rejection.

The appellants urge us to consult the specification and some of the cited prior art, including Brown, and interpret the disputed language more narrowly in view thereof. When read in light of this material, according to applicants, the "true" meaning of the phrase emerges. We decline to attempt to harmonize the applicants' interpretation with the application and prior art. Such an approach puts the burden in the wrong place. It is the applicants' burden to precisely define the invention, not the PTO's. See 35 U.S.C. § 112 p 2 ("The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."). While it is true that the claims were not rejected on the ground of indefiniteness, this section puts the burden of precise claim drafting squarely on the applicant.

The problem in this case is that the appellants failed to make their intended meaning explicitly clear. Even though the appellants implore us to interpret the claims in light of the specification, the specification fails to set forth the definition sought by the appellants. Nowhere in the technical description of the invention does the application use or define the phrase "integrally formed." The phrase briefly appears in the "Summary of the Invention" and again in a description of the "advantages of the present invention." In neither case is a drawing referenced or a precise definition given.

The prosecution history is equally unhelpful in divining the interpretation sought by appellants. In all cases the appellants first describe their invention followed by a general description of the prior art reference. They then conclude with a conclusory statement such as "[I]t is clear that Applicants' inventive concept, as recited in claim 1 (amended), is not anticipated by the prior art," or, even more vaguely, "it is clear that the base plate and housing arrangement disclosed in Brown '888 is completely different in structure than the acoustic isolator apparatus recited in Applicants' claims." Never do the appellants particularly distinguish their claimed invention (as compared with their "inventive concept," whatever that means) from the prior art. We interpret this as a veiled attempt to avoid the potential future effects of prosecution history estoppel. Such evasiveness we cannot condone, particularly when the public must rely on the written record to define the resulting property right. See *Warner-Jenkinson*, --- U.S. at ----, 117 S.Ct. at 1040.

We understand the difficulties that can arise in prosecution. This appeal is a case in point. The PTO initially rejected claim 1 in light of Brown. Appellants amended their claim to add the limitation that the compliance area was "integrally formed on" the support member. This amendment seemed to overcome the examiner's rejection because in response the examiner produced a new ground for the rejection (i.e., Biermeier). That

reference showed a thinned-down region of a supporting top member. The examiner's own actions suggested that the applicants had properly distinguished Brown on the ground that the Brown pad was not "integrally formed" from the support member, which necessitated the new ground of rejection.

Appellants were apparently able to overcome this new rejection by adding the further limitation that the acoustic isolator eliminated "selected frequencies of acoustic noise" and arguing that Biermeier did not accomplish this claimed function. At this point the applicants had no reason to believe that Brown could properly be the basis for a 102 rejection, having previously distinguished it as well as Biermeier. When the examiner renewed his previous ground of rejection based on Brown, the appellants were no doubt of the view that Brown was distinguishable. Nonetheless, they made their third and final amendment, adding the limitation that the acoustic compliance area be integrally formed "as a portion of" the support member, in an attempt to assuage the examiner. Surely they must have thought this amendment would distinguish Brown, and reasonably so given what had previously transpired. Unfortunately they were mistaken.

Nonetheless, when the examiner renewed the rejection the applicants had an obligation to either demonstrate that the examiner's interpretation of the claim language was unreasonable or amend their claim to distinguish the prior art. This they did not do. It is apparent that the appellants knew how to claim their invention so as to avoid the prior art since several claims were allowed, some very similar to claim 1. The PTO was not only permitted but obligated to reject claim 1 when appellants failed precisely to define in the written description the disputed language, and there was a reasonable alternative definition.

The decision of the Board is

AFFIRMED.

COSTS

Each party to bear its own costs.

1 All of the other claims were also rejected on the same grounds. Because all of the appealed claims stand or fall with claim 1, we will confine our discussion to the prosecution history of claim 1.

2 The examiner did, however, allow claims 10-19 and 23 and merely objected to claim 21. Claim 10, for example, reads:

10. An improved acoustic isolation apparatus for a disc drive assembly having an external housing with a lower surface and a top surface, the disc drive assembly including at least one excitation source secured to and between the lower and top surfaces of the housing at contact points, whereby vibration of the excitation source is coupled to the housing to cause the housing to vibrate so as to create acoustic noise, the improved acoustic isolation apparatus comprising:

at least one high compliance area formed as a portion of one of the surfaces of the housing which surrounds and extends radially about the contact point on said surface, the high compliance area having a thickness substantially less than the thickness of the remainder of the surface, the high compliance area minimizing the passage of the excitation source vibrations from the contact point to the remainder of the surface so that overall acoustic noise is reduced thereby.

3 Despite the language in Section 102, there is no such presumption before the issuance of a patent. Compare 35 U.S.C. § 102 ("A person shall be entitled to a patent unless") with 35 U.S.C. § 282 ("A patent shall be presumed valid."). The presumption does not attach until a patent has issued.